

# Expanding Universe: Blind Physics

*(Star Redshift Is Not The Doppler Effect)*  
*(Redshift Is Wavelength Shift; There Is No Frequency Shift)*  
*(Neither The Observers Nor Gravity Can Bend Light)*

**Bandula W. Dahanayake**

Farmfield Crescent, Kanata, ON, Canada

Bandula\_Dahanayake@yahoo.com

**Abstract**—Star redshift/blueshift is wavelength shift; there is no frequency shift. Frequency is unaltered. If space expands, the speed of light cannot be constant. Expanding space cannot move gravitationally bound galaxies. If a galaxy has a radial motion, the observed redshifts of all the stars in the same galaxy must be the same. The redshifts of stars in the same galaxy cannot be the same, and it is even possible for some of the stars in the same galaxy to have different blueshifts. The different redshifts of stars in a galaxy cannot be a result of the radial motion of the galaxy itself. The cause of different redshifts and blueshifts of stars in the same galaxy must be the same, and that cause cannot be the radial motion of the galaxy since radial motion of the galaxy cannot generate different redshifts and blueshifts. Galaxies cannot have radial motions relative to observers. Star redshift and blueshift are not a result of the Doppler effect. Space cannot expand. Propagation of light is not relative.

The Doppler effect is not a phenomenon of the wave itself; it does not alter the wave. It is simply an observer phenomenon. The observed wavelength shift and frequency shift in the Doppler effect are not present in the wave. The Doppler effect is for observer eyes and ears only. The Doppler effect requires a homogeneous medium. Star redshift/blueshift cannot be attributed to the Doppler effect since the light from stars propagates in an inhomogeneous medium. The change of speed of light along the path, the refraction, the redshift or blueshift of the wavelength while frequency remain unaltered, and the naturally inhomogeneous medium, and the absence of continuous gradual change of the apparent brightness of stars completely rule out the Doppler effect as the cause of the star redshift/blueshift and invalidate the concept of expanding universe. Properties of light are independent of the source and/or observer motion.

Expanding space cannot generate a galactic blueshift. Star redshift and blueshift must have a common cause, and expanding universe cannot be the common cause. Star blueshift is a direct contradiction to the claim that the star redshift is a result of universe expansion.

The redshift/blueshift of light from stars in distant galaxies is not a result of radial motion of galaxies. Galaxies themselves are gravitationally bound. Expanding space cannot change the mutual distances

between gravitationally bound objects or object clusters such as galaxies. Expanding space cannot shift the wavelength since the waves are not anchored to the space. Space is not an anchor. Expanding space moves nothing since nothing can be anchored to space, which is nothing. Space cannot expand or contract. Space is unaffected by matter and energy. Matter and energy are unaffected by space. Energy has no existence independent of masses, and hence mass cannot be converted to energy.

A gravitational object is surrounded by a material medium. The larger the mass density of the object, the higher is the density of the medium it surrounds. A gravitational object generates a density gradient in the medium. The change of speed of light due to the change of the medium and the density gradient of the medium refracts or bends light. Since the frequency is unaffected by the density gradient of the medium and gravity, the change of speed of light leads to a wavelength shift, a redshift or blueshift. The redshift and blueshift are wavelength shifts, not frequency shifts. Frequency is unaltered.

The propagation of light towards a gravitational object is in the direction of an increasing density gradient of the medium and hence a decrease in the speed of light, and as a result, a decrease in wavelength, a blueshift, since the frequency is unaltered. The propagation of light outward from a gravitational object is in the direction of the decreasing density gradient of the medium and hence an increase in the speed of light, and as a result, an increase in wavelength, a redshift, since frequency is unaltered.

There is no frequency shift in the Pound-Rebka experiment. What is shifted in the Pound-Rebka experiment is the wavelength due to the change of the speed of light; the frequency is unaltered. What changes the speed of light, and hence the shift of wavelength in the Pound-Rebka experiment, is the density gradient of the medium. If the Pound-Rebka experiment is done in a vacuum, there will be no redshift or blueshift.

The bending of light near the sun is a result of the density gradient of the medium, not a direct effect of gravity on light. Gravitational objects warp or generate a density gradient of the medium, and the density gradient of the medium bends or refracts light. Light does not propagate on geodesics. There is no geodesic without a medium. Light is not affected by

gravity and vice versa. Light that can be of any direction cannot follow constrained geodesics. Gravity has no effect on light in the absence of a medium. It is the medium that mediates an interaction between gravity and light. We cannot claim gravity bends light by observing the refraction of light by the medium surrounding the sun. If the sun is in a vacuum, there will be no refraction of light near the sun. Stars and planets are not in a vacuum.

It is only the wavelength that is redshifted or blueshifted near a gravitational object in the presence of a medium; frequency is unaffected. The redshift or blueshift of the wavelength near a gravitational object in the presence of a medium cannot be used to claim that the time itself is affected by gravity since the frequency is unaltered. The speed of light is changed by the density gradient of the medium while frequency remains unaffected and hence wavelength is shifted.

We can redshift or blueshift a wave electronically, and it is very common in telecommunication. The shift of the frequency of a wave does not require the change of time itself. Gravity cannot alter the time period of a wave and hence the frequency of a wave. Star redshift/blueshift is the wavelength shift, not a frequency shift; frequency is unaltered. Neither the wavelength shift nor the frequency shift requires the change of time itself. The time itself cannot be altered. Clocks cannot change the time. The wavelength can be altered by the change of medium. The frequency can be altered by modulation and filtering. The time itself cannot be altered, and time is not altered.

A star in a galaxy is surrounded by a material medium with a decreasing density gradient from the star. Light from a star in a distant galaxy passes through its decreasing density gradient and many other medium variations and density gradients before the light enters an increasing density gradient of the earth. If the effective overall medium density gradient from the star to earth is negative, then, the net result is an increase in wavelength, a redshift. If the overall medium density gradient from the star to earth is positive, then, the net result is a decrease in the wavelength, a blueshift. Most stars have redshifts while there can be stars with blueshifts.

Star redshift is more common than blueshift since the density gradient of the medium surrounding a star is much higher than the density gradient of the medium surrounding the earth due to the large masses of stars. However, if the in-between medium happens to have a positive density gradient so that the overall net density gradient from the star to earth is positive, then, the result is a blueshift as in the case of some stars in the Andromeda galaxy. The Andromeda galaxy must have stars with redshifts.

Stars eject more material over time resulting in an increasing medium density surrounding the stars, which in effect will increase the galactic redshift over time. Increasing redshift cannot be attributed to an acceleration of the universe. Universe is neither expanding nor accelerating.

Frequency is unaffected by the change of medium. The change of the medium alters the speed of light, which in turn shifts the wavelength and bends the light. We can represent the change of wavelength as a frequency shift under the hypothetical assumption that the shifted wavelength is propagating at the constant speed in the vacuum just for comparison; this frequency shift is not real since frequency is unaffected by the change of the medium and density gradient of the medium. Time, frequency, and space are unaffected by gravity and a medium.

The motion of a star and/or observer cannot shift the frequency and the wavelength of light a star emits. The observed redshift/blueshift in the Doppler effect is not present in the wave itself that propagates from a source to an observer. The Doppler effect is purely an observer phenomenon, not a physical phenomenon of the wave. There is no actual change of wavelength without change of the speed of the light. There is no actual change of the speed of light without the change of the medium. The speed and the direction of light can only be altered by a medium. The Doppler effect is purely in the observer's eyes and ears only. There is no Doppler effect in the absence of observers. Even when there is an ambulance in motion, there is no approaching/receding ambulance without an observer.

Space is not warpable. Only a material medium is warpable. If space is warpable, it is the volume of an object that determines the warp, not the mass of an object. The mass of an object warps the medium that the mass surrounds. The claim in General Relativity that a mass warps space is illogical. Gravity has no effect on the time, a year. Frequency of light is unaffected by gravity. Clocks cannot change the time, a year, one complete orbit of earth. The dependence of clocks on the environment that clocks are in does not affect the time, a year. Your age in earth years is the same whether you are on a spaceship, on earth, on mars, or on any other planet. The age in earth years is not determined by clocks. Clocks are devices engineered to break down the time, a year, into finer intervals. The time, a year, is unaffected by the clocks.

There is no acceleration without the change of the position. Gravity is not acceleration. A stationary cabin on a gravitational object is not equivalent to a moving cabin at an acceleration. Principle of equivalence is false. Light is not relative, and hence an observer inside a cabin can determine if the cabin is stationary, moving at constant speed or at an acceleration.

Light cannot be made relative by proclamation as it is done in Special Relativity. Einstein derailed the train of light. Maxwell equations for propagating light apply only on stationary frames in space. Maxwell equations for propagation of light cannot be transformed onto inertial frames uniquely in real time. Both the speed and direction of light are naturally independent of inertial frames since light does not propagate relative to inertial frames. Light propagates in space even in the presence of a medium. If the medium is pulled out, light does not move with the medium.

Gravity, gravitational potential, gravitational force are not inherent properties of a mass; they are acquired properties of a mass due to the interaction between masses. A mass itself has no gravity, no gravitational potential, no gravitational force. The term energy is referred to the kinetic energy of masses; any other energies are potential energies. Any potential energy is not energy unless it is converted into kinetic energy of masses. Energy has no independent existence without particles of mass.

A mass cannot be converted to energy since energy has no existence without the motion of particles of masses. There is no independent entity called energy. Mass and energy are not equivalent. The motion of particles of mass has energy. Masses at standstill have no energy. Mass and energy are not equivalent. There is no energy without the motion of masses. Energy cannot be conserved without the mass being conserved since the energy has no existence without mass. Mass must be conserved.

Time width is available only in its passing. Without a time-width in real time, time cannot be an axis. There is the space we occupy. There is the time, a year, one orbit of the earth. Space and time are mutually independent. There is no spacetime as a mutually dependent function of space and time. Light does not have to zip up mutually independent space and time into mutually dependent spacetime by the speed of light  $c$  for the light to propagate at constant speed  $c$ . Time and space have no hems to zip up. What is constant is the distance light travels per unit time, not the distance/time ratio in general. Light propagates at constant velocity that can only be altered by a medium, not by observers and gravity.

Special Relativity and General Relativity run on manufactured average return time of a light beam, and hence they do not run in real time given by clocks. The Lorentz-Einstein factor is a result of using the average return time of a light beam in Special Relativity, and hence the Lorentz-Einstein factor cannot be used in real time given by clocks. Clocks do not give the average return time of a light beam. Special Relativity and General Relativity are incompatible with clocks irrespective of the mechanism of the clocks. Relativity violated one of the basic laws of nature that "the velocity of light is independent of the observers and gravity". Neither the observers nor gravity can derail the light or change the speed of light on its fixed path.

Blackholes (Blackpeaks) are not the abstract mathematical singularities that General Relativity portrays them to be. Blackholes (Blackpeaks) are objects with large mass densities. Blackholes (Blackpeaks) are not holes, rather *blackpeaks*. The claim that even light cannot escape from a blackhole (blackpeak) is false. Gravity has no direct effect on light. Blackholes (Blackpeaks) do not attract light, the massless. The generation of a steep medium density gradient in the medium by a blackhole (blackpeak) leads to a total internal reflection of non-radial

outgoing light, and any oncoming light is prevented from leaving due to the refraction by the same steep density gradient that surrounds a blackhole (blackpeak), making blackholes (blackpeaks) invisible.

Blackholes (Blackpeaks) cannot prevent outgoing radial light and reflected incoming radial light from leaving. However, the escaping radial light undergoes a significant redshift due to the large negative density gradient of the medium surrounding a blackhole (blackpeak), which brings the wavelength of the escaping radial light below the visible region. The speed of light is decreased as light propagates towards a blackhole (blackpeak) in the presence of a medium. The frequency of light is unaffected by a blackhole (blackpeak) since frequency is unaffected by the change of medium, the density gradient of a medium, and gravity. Time is unaffected by a blackhole (blackpeak). Although clocks are affected by gravity as a chunk of mass, clocks do not determine time, a year. Since the speed of light is altered while the frequency remains unaltered by the density gradient of the medium at a blackhole (blackpeak), the wavelength is shifted. The redshift and blueshift of light from a star always refer to the wavelength shift. There is never a frequency shift by a medium or by gravity.

The laws of physics for the motion of objects of mass are independent of the frame of reference since the motion of masses is relative. The laws of physics for the propagation of light are independent of the frame of reference since the propagation of light is not relative. Light propagates in space. Light does not propagate relative to inertial frames. Light propagates in space even in the presence of a medium. The laws of motion for objects of mass (the motion mechanics) and the laws of propagation of electromagnetic waves (the propagation mechanics) are independent of the frame of reference for completely opposite reasons. Einstein's fundamental mistake in Special Relativity and General Relativity is the forcing of light to behave as golf balls. Light is not relative.

The fallacy of Special Relativity and General Relativity is the illogical forcing of light to surrender to the laws of motion of masses. If the space is warpable and a mass warps the space as stated in the General Relativity, the motion of a mass changes the warp resulting in a resistance to the motion and hence the collapse of orbiting systems. Space is not warpable. The motion of objects of mass and the propagation of light cannot be unified since light is not relative. Despite Einstein's claim, light does not behave as golf balls. Although Special Relativity falsely claims that there is no absolute frame, in hindsight, a beam of light has been used as the absolute frame in Special Relativity. The hypothetical rest energy of a mass in Special Relativity is a result of using a beam of light as the absolute frame. The rest energy of a mass is imaginary, not real. Expanding Universe stems from blind physics with observation misinterpretations. Special Relativity and General Relativity are invalid in their very foundation since light is not relative.

Universe is not expanding. The incomprehensible concept of expanding space is a misguided blind mistake, blind physics.

**Keywords**—Redshift; Blueshift; Space; Einstein; Newton; Gravity; Galaxy; Light; Lorentz; Special; General Relativity; Clock; Blackhole; Time; Expand

## I. INTRODUCTION

Lemma:

*The redshift of a star in a galaxy cannot be attributed to the radial motion of the galaxy since the redshifts of all the stars in a galaxy are not the same.*

Property:

*The redshift or blueshift of light from a star cannot be attributed to the Doppler effect. The Doppler shift requires a homogeneous medium. Light from stars does not travel in a homogeneous medium.*

Lemma:

*The Doppler effect is for the observer's eyes and ears only. The source and/or observer motion cannot change the actual frequency and wavelength of a wave.*

Property:

*It is only the wavelength that is redshifted or blueshifted near a gravitational object in the presence of a medium; frequency is unaffected.*

Theorem:

*The laws of physics for the motion of objects of mass are independent of the frame of reference since the motion of masses is relative. The laws of physics for the propagation of light are independent of the frame of reference since the propagation of light is not relative. Motion mechanics and propagation mechanics are naturally observer independent for opposite reasons, no Special Relativity and General Relativity are required.*

In the late sixteenth century, Galileo claimed that there is no experiment one can perform inside a closed cabin to determine if the cabin is stationary or moving at constant speed. When Galileo made this claim, there was not much known about the propagation of light. Galileo was referring to the fact that it is not possible to determine the state of a closed cabin from inside using the motion mechanics, the motion of masses, since the motion of objects of mass is relative. The laws of physics governing the motion of objects of mass are relative.

What Galileo was referring to was the laws of physics known at his time, the fact that the laws of physics of moving objects of mass are independent of the frame of reference. Galileo was not referring to the laws of propagation of light since they were not known at the time of Galileo. Galileo did not claim it is not possible to determine if a closed cabin is stationary or moving at constant speed using a beam of light. Galileo only claimed that the motion of dynamics of

objects of mass are relative, independent of the frame of reference, an inertial frame. Galileo's claim does not prohibit the use of a beam of light for determining the state of a closed cabin if the light is naturally not relative.

There is no reason for anybody to force the propagation of light to fit into Galileo's claim by forcing a fake momentum on light if light does not have a momentum naturally. Light does not have momentum since the massless has no momentum. Momentum is a property of the masses. If the light is not relative, it is indeed possible to determine if a closed cabin is stationary or moving at constant speed using a beam of light. The massless cannot behave as objects of mass. Light cannot behave as golf balls naturally.

However, when Einstein came into the scene, the laws of propagation of light had been well established. The speed of light is constant. The speed of light and the direction of light can only be altered by a medium. Einstein made a wrong conclusion that Galileo's claim must include not just the laws of motion of masses, but also the laws of propagation of light. Einstein conjectured that it is not just the motion mechanics or the laws of physics for the motion objects of mass that must be independent of the inertial frame, the laws of physics in general, for objects of mass as well as for light, must be independent of an inertial frame.

Einstein incorrectly thought that for the propagation of light to be independent of frame of reference, light must be retrofitted into Galileo's claim, which was made before the laws of propagation of light were established, so that the propagation of light would not allow an observer inside a cabin to determine if the cabin is stationary or moving at constant speed neither with the motion of masses nor with a beam of light. If Einstein had bothered to check if the light is naturally independent of the frame of reference, he would have found that the light is indeed naturally frame independent, light is not relative, and hence it is unnecessary to force and bring the light into submission to comply with the motion mechanics of masses.

To force the laws governing the propagation of light to be independent of inertial frames, or light to be relative, Maxwell equations must be transformable onto inertial frames uniquely. Maxwell equations are not transferable onto inertial frames uniquely [6] and hence Maxwell equations for propagation of light are not relative. Light cannot behave as golf balls. Propagation of light does not fit into Galileo's claim since light is not relative, even though Einstein was determined to force the laws of propagation of light into Galileo's claim. Einstein was ready to even alter reality to achieve his intended goal, and in fact that is exactly what he did; he altered reality. He forced light to behave as golf balls declaring light consists of particles of momentum. He gave massless light a momentum by declaration.

According to the Maxwell equations for the propagation of light, the velocity of light is fixed in

vacuum and it can only be altered by a medium. Light cannot propagate relative to moving frames since light travels on a fixed track at a speed that is constant in vacuum and can only be altered by a medium. The velocity of light is independent of inertial frames. It is not just the speed of light that is fixed, the direction of light is also fixed. As a result, it is not just the speed of light external observers cannot change, external observers cannot derail light too. It is not possible to fit the laws of propagation of light into Galileo's claim unless light has a momentum. The problem is that the massless has no momentum. Light has no mass. Light has no momentum. The massless, cannot be given momentum by proclamation. However, that did not deter Einstein from his intention of forcing laws of propagation of light into Galileo's claim; he forced a momentum on light by assumption, by proclamation.

Despite the fact that light is not relative, Einstein gave light a momentum by proclamation in order to extend Galileo's claim for the motion mechanics of the objects of mass into the propagation of light, and in the process Einstein derailed the light relative to external observers. To give light a momentum and make the light relative, Einstein had no option but to derail light relative to observers. Einstein broke one law of propagation of light, the law that the direction of light is constant, in order to protect the law that the speed of light is constant, and fit the light into Galileo's claim. He disregarded the fact that observers cannot derail light. What Einstein did not realize is that when light travels on a fixed path, the speed of light is naturally observer independent. The speed of any entity on a fixed path is naturally observer independent. Observers cannot derail a train.

External observers cannot derail light since the path of light is fixed in vacuum and in a medium. Since light is not relative and does not propagate relative to inertial frames, it is indeed possible to find the state of a closed cabin, if a closed cabin is moving or not, from inside the cabin using a burst of light. This does not contradict Galileo's claim, it adds to Galileo's claim. Further, since light is not relative and does not propagate relative to inertial frames, it is also possible to determine if a closed cabin is stationary on earth or moving under acceleration using a burst of light.

*“Since the light is not relative, it is possible to determine if a closed cabin is at standstill, moving at constant speed, or accelerating from within the cabin using a beam of light.”*

The whole of Modern Physics originated with Einstein's desire to force one of the laws of light, the constancy of the speed of light, to fit onto Galileo's claim that the laws of motion dynamics are relative while disregarding the fact that it is not just the speed of light that is a constant, the direction of light is also a constant. Galileo never considered light as a part of his claim. So, Einstein forced light to be relative or to behave as golf balls. By forcing light to behave as golf balls, Einstein claimed that light is particles. Einstein's photons or light quanta derivation is incorrect since

light has no entropy and Boltzmann entropy equation does not apply for light [2]. Einstein gave light a fake hypothetical momentum so that he can custom fit light into Galileo's claim.

In 1868, when Maxwell equations were introduced for the propagation of light, it was revealed that the speed of light is a constant determined by the electric and magnetic characteristics of a medium. It also raised the question whether the axes  $(x,y,z)$  and time  $t$  in the Maxwell equations can be of any inertial frame. It was argued that if the Maxwell equations are valid for axes  $(x,y,z)$  and time  $t$  on any inertial frame, the Maxwell equations must be transferable from one inertial frame to another inertial frame while maintaining the form of the Maxwell equations unaltered.

*“In Maxwell equations both the speed of light and the direction of light are constants in the vacuum and can only be altered by a medium.”*

Lorentz wanted to maintain the velocity (both the speed and the direction) of the light to be frame independent. Lorentz attempted to do that under the assumption that time  $t$  is relative (relative time) and time  $t$  depends on the position  $x$  of the space, which is known as the spacetime. Lorentz transform runs in real time, the time given by clocks. However, his transformation could maintain the form of the Maxwell equations on a moving frame only partially; it had an unwarranted term he could not get rid of, but he published it anyway [1]. This is a serious problem, because it indicates that the Maxwell equations are not transferable onto a moving frame, or in other words, Maxwell equations are not relative. If they are relative, they must be transferable from one inertial frame to another while maintaining the form totally unaltered. If Maxwell equations are not transferable uniquely onto a moving frame, propagation of light is not relative.

Einstein thought he could rescue Lorentz transform and make the Maxwell equations transferable onto a moving frame while keeping the form of the Maxwell equations unaltered. In other words, he thought he could make Maxwell equations relative. The only problem was that he made the Maxwell equations transferable onto a moving frame by using a multiplication factor  $\gamma$  derived under the assumption that light is relative. So, in the case of Einstein's Special Relativity, the claim and the derivation are circular.

Einstein indirectly assumed that light is relative in his thought experiment where he considered a vertically fired beam of light in a horizontally moving train in order to prove that light is relative. He assumed that a vertically fired beam of light from the bottom of a horizontally moving train travels vertically relative to an observer in the cabin, in other words, Einstein assumed light to behave as golf balls, which is the foundation of Special Relativity. If light is not relative, or if light does not behave as golf balls, a vertical light beam from the bottom of a horizontally

moving train at constant speed cannot have a vertical path relative to a passenger on the train. Special Relativity forced light to be relative by assumption, by proclamation.

Einstein used a thought experiment to demonstrate what has to happen for the speed of light to remain independent of frame of reference if a beam of light is released vertically from the bottom of a horizontally moving train. He assumed that a vertical beam of light from the bottom of a horizontally moving train travels vertically relative to the train; in other words, he forced light to be relative by assumption. He also violated the fact that it is not just the speed of light that is constant in Maxwell equations and Lorentz transform, the direction of light is also a constant. The velocity of light remains constant in the vacuum or in a medium and can only be altered by the change of medium.

In Einstein's thought experiment, where he considered a vertical light beam on a horizontally moving cabin, the light beam takes an angular path relative to an outside observer. Path of light cannot be observer dependent. Observers cannot bend light. It is only that the path of light as a whole can shift relative to observers while the direction of light and the speed of light on its fixed path remain unaltered [4]. Only a change of medium or change in the density of a medium can bend light. Light, the massless, an entity that has no standstill existence, cannot behave as golf balls. For an entity to be relative, that entity must be able to be stopped. Light cannot be stopped since light has no existence without propagating. Light has no momentum. In Special Relativity, Einstein forced a fake momentum on light by assumption.

In Special Relativity and General Relativity, time is given by the two-way return travel time of a beam of light. If time is relative, one-way time given by clocks will be directional. In order to overcome that problem, Einstein used two-way return travel time of a light burst [6]. So, Einstein also redefined time as the average return time of a light beam; that is the average time taken for the beam to hit the ceiling and return to the source in his moving cabin thought experiment, where the average return time  $t'$  on a frame moving at speed  $v$  relative to an external observer is related to the average return time  $t$  on the frame of the external observer by  $t' = \gamma t$ , where  $\gamma = 1/\sqrt{1-v^2/c^2}$  [1]. By introducing the factor  $\gamma$  into the Lorentz Transform, Einstein was able to maintain the form of the Maxwell equations in the Lorentz Transform, which is known as the Lorentz-Einstein transformation. The factor  $\gamma$  is known as the Lorentz factor. Einstein obtained the factor  $\gamma$  by forcing the light to bend relative to observers even though observers cannot bend light, and the direction of light in Maxwell equations is determined by a medium and observer independent. Observers cannot derail trains. Einstein derailed the train in Special Relativity.

The problem is that no clock runs on the two-way average return time of a light beam. Two-way average return time of a light beam can only be calculated off-

line, for the past. No online algorithm can run on a two-way average return time of a light beam. Clocks do not display two-way average return time of a light beam. No clock gives the two-way average return time of a light beam. Clocks run forward on one-way time. The Lorentz transform without the multiplication factor  $\gamma$  runs on forward real time given by the clocks based on one-way travel time of a light beam, however, it cannot transform the Maxwell equations onto an inertial frame without altering the form of the Maxwell equations [1]. The Lorentz-Einstein transform with the multiplication factor  $\gamma$  can transform the Maxwell equations onto an inertial frame while maintaining the form of the Maxwell equations, but it runs on two-way average return time of a beam of light, which is not given by clocks.

The time given by clocks is not the time used in the Lorentz-Einstein transformation, Special Relativity and General Relativity. In addition, in the Lorentz-Einstein transformation, the path of light is not constant since it includes the factor  $\gamma = 1/\sqrt{1-v^2/c^2}$  that was obtained by violating the constant path of light in Maxwell equations. It is not possible to transform Maxwell equations onto an inertial frame without making the path of the light observer dependent. It is not just the speed of light that must be observer independent, the path of light must also be observer independent. The Lorentz-Einstein transform violated one of the basic laws of nature, the observer independence of the velocity of light. In the Lorentz-Einstein transform, Special Relativity, and General Relativity, Einstein only concentrated on the constancy of the speed of light, and totally ignored the constancy of the path of light. Just like the speed of light, the path of light can only be altered by the change of the medium, and hence cannot be observer dependent.

Even though the Lorentz transform runs on forward real time given by clocks based on travel time of a beam of light, the Lorentz-Einstein transform runs on the average return time of a light beam, which is not given by the clocks. Average return time of a light beam is not available on clocks. The average return time of a light beam has to be calculated off-line. It is not possible to claim that the time is relative or the time given by clocks is relative since the time in Special Relativity and General Relativity are based on the average return time of a light beam that is not given by clocks. There is not a single clock that has a mechanism based on the average return time of a beam of light. There is not a single clock even with a mechanism based on the one way travel time of a beam of light, which is required by the Lorentz transform. Clocks in Lorentz transform, Special Relativity, and General Relativity are based on the travel time of beams of light; they are special clocks, not ordinary clocks. Ordinary clocks are not applicable in Lorentz transform, Special Relativity, and General Relativity. Relative time in Special Relativity does not apply to ordinary clocks we use.

You cannot use the clocks to claim time is relative since clocks are not designed to give average return

time of a light beam. Clocks do not give the average return time of a light beam that is used in Special Relativity and General Relativity. Special Relativity and General Relativity are incompatible with clocks and the time given by clocks, the oneway time. Special Relativity and General Relativity do not apply to electronic clocks, atomic clocks, or any clock that is not based on the average return time of a beam of light.

The time, a year, is one complete orbit of the earth. Clocks are being engineered to break down a year into smaller intervals, hour, minute, and seconds since the year is quite long. Clocks cannot change the time, a year given by one complete orbit of the earth. What is displayed on clocks does not determine the time, a year. Clocks are just measuring instruments for the time, a year. As it is with any other measuring instrument, the reading on clocks depends on the environmental factors.

*“The time, a year, one complete orbit of the earth, is not determined by the clocks.”*

As it is with any engineered device, Clocks only display the correct readings if the clocks are in an environment that meets the design specifications. If clocks give different readings for observers in different inertial frames or different gravitational fields, that does not mean the time, a year, itself depends on the observer motion and gravity. It is the clocks themselves that depend on the motion and gravity, not the time, a year, itself. The time, a year, is independent of observer motion and gravity.

*“The time, a year, one complete orbit of the earth, is independent of gravity.”*

It was Einstein who introduced the Lorentz factor  $\gamma=1/\sqrt{1-v^2/c^2}$  into the Lorentz transform and made the Lorentz transform workable in transforming the Maxwell equations onto an inertial frame. The Lorentz factor is a double-edged sword. Lorentz's initial transformation without the factor  $\gamma$  runs on real oneway time given by clocks, but the initial Lorentz transform without factor  $\gamma$  cannot transform the Maxwell equations onto an inertial frame without altering the form of the Maxwell equations. However, with the introduction of the factor  $\gamma$ , Maxwell equations can be transformed onto an inertial frame while maintaining the form of the Maxwell equations, but it has the drawback that it no longer runs on real time since the factor  $\gamma$  requires the time to be the average return time of a beam of light, which is not available in real time. Average return time of a beam of light cannot be obtained in real time; it is not given by clocks. Average return time of a beam of light is an entity that must be calculated off-line. Einstein obtained the average return time of a beam of light by violating the fact that the path of light is a constant in Maxwell equations. Einstein derailed the train. Observers cannot derail a train.

Einstein also forced light to be relative by claiming that a vertical light beam from the bottom of a

horizontally moving train travels vertically relative to an observer inside the train, as if light is a baseball. In other words, he gave light an artificial momentum in Special Relativity by proclamation. In special relativity, light is relative by assumption. In special relativity, light is given a momentum by assumption. In Special Relativity, light is derailed relative to observers purposely by violating the Maxwell equations and Lorentz transform. Maxwell equations and Lorentz transform require both speed of light and the direction of light to be constants that can only be altered by the change of the medium.

*“Clocks do not display the average return time of a beam of light, which is the working time of Special Relativity and General Relativity.”*

*“The velocity of light (both the speed of light and the direction of light) are constants in vacuum and can only be altered by a medium. Observers cannot bend the light.”*

Special Relativity also had its limitations. Special Relativity is limited to inertial frames on linear paths. Special Relativity does not apply for objects moving at constant speed on circular or nonlinear paths. Special Relativity does not apply on accelerating frames. Einstein looked for ways to incorporate the constancy of the speed of light onto accelerating frames. As was the case with Special Relativity, he ignored the fact that the direction of light is also a constant determined by a medium in his extension of the constancy of speed of light onto accelerating frames.

In 1915, under the false proclamation that an object at standstill under gravity is the same as the object under linear acceleration, which is the principle of equivalence, Einstein introduced the General Relativity in order to extend the Special Relativity to incorporate gravity. General Relativity put the universe in a very precarious position. General Relativity led the universe into a possibility that it could be stationary, expanding, or contracting even though space cannot expand or contract.

The redshift of a star in a galaxy is not a result of the radial motion of the galaxy. The idea of expanding and contracting space is meaningless. Space cannot expand or contract, only a material medium can. If it expands or contracts, that 'it' cannot be the space.

In 1912, Vesto Slipher found that the light observed from distant stars in galaxies had a redshift. In 1926, using Slipher's redshift data together with his own distances to the galaxies based on cepheid variable stars, Edward Hubble plotted the redshifts against the distance to the galaxies and managed to fit a straight line using the least squares fit to the data even though the data were somewhat scattered; so, Hubble's plot was clearly an approximate relationship.

Despite the large distances to the galaxies and the fact that the medium is inhomogeneous, both Slipher and Hubble misinterpreted the redshift as a Doppler effect due to the radial motion of galaxies. The

Doppler effect only applies for homogeneous media. The Doppler effect does not apply for inhomogeneous media. Light from stars in distant galaxies propagates in inhomogeneous media on its way to an observer on earth and hence the Doppler effect does not apply. A medium in the presence of a gravitational object is always inhomogeneous and all the gravitational objects are surrounded by a medium. The Doppler effect is not applicable to the redshift of light from stars since all the stars are surrounded by dense media with steep radial density gradients and the earth, where the observers are located, is also surrounded by a medium with a significant radial density gradient.

In the Doppler effect, the speed of light is unchanged, and as a result, an observer detects the shift of both frequency and wavelength. The frequency shift in the Doppler effect is a clear indication that the Doppler effect is not real and it exists for the observer's eyes/detectors only. The source motion and/or observer motion cannot change the actual frequency and wavelength of a propagating wave. Galactic redshift/blueshift cannot be attributed to the Doppler effect.

*"The motion of a source does not generate a redshift or blueshift if there is no observer/detector to observe/detect. The doppler effect is purely an observer phenomenon, it is not a phenomenon of the wave itself. The Doppler effect is not real."*

Hubble incorrectly represented his redshift against the distance plot as the radial speed of galaxies against the distances giving the relationship  $u=Hd$ , where  $u$  is the radial speed of a galaxy,  $d$  is the distance to the galaxy, and  $H$  is a constant now known as Hubble constant. All the efforts to justify why galaxies can have a radial speed relative to observers appear artificial and hollow. The use of a blowing balloon to explain the radial motion of galaxies is childish and nonsensical; it demonstrates blindness to reality. Placing galaxies on the surface of a balloon and blowing the balloon to demonstrate how galaxies can have a radial speed described by the Hubble relationship  $u=Hd$  demonstrates their desperateness to justify it by any means, nothing more. They fail to realize that the galaxies in such an arrangement on the surface of a balloon will lead to a gravitational collapse. Students were taught that in school and they too repeated the story like a verse in a religious text. It is only an outsider who could see the mockery of it.

They also interpreted  $1/H$  as the age of the universe. If  $H$  is a constant,  $1/H$  is a constant, which means that the universe is forever young. Age of the universe cannot be constant. Hubble also made a serious mistake in the interpretation of the redshift. What Hubble observed was the redshift of a star in a galaxy. It is not possible to attribute the redshift of a star in a galaxy to the redshift of the galaxy since the redshifts of all the stars in a galaxy are not the same. In fact, most of the stars in a galaxy have different redshifts while some of the stars in the same galaxy

can even have different blueshifts. Redshift/blueshift of a star in a galaxy cannot be attributed to the radial motion of the galaxy.

Unrealistic assumptions used in Einstein's General Relativity led to a theoretical possibility of having a universe that is stationary, expanding, or contracting, which is a clear theoretical and conceptual fabrication. Hubble's experimental observations misinterpretation led to the claim that the galaxies are moving away from us, which is a clear observational fabrication. Putting these fabrications together, they use the galactic redshift to claim that the universe is expanding. They fail to realize that the galaxies themselves are gravitationally bound orbiting systems. The mutual distances between gravitationally bound objects or object clusters cannot change with the expanding space since objects are not anchored to space.

Space cannot expand. If it is expanding, it cannot be the space. Space, which is nothing, cannot be dynamic. If mass affects space, the motion of mass will alter the change of space, which in turn resists the motion of the mass resulting in the collapse of orbiting systems. Only the matter expands. If mass affects space, the universe as we see it is not possible. If space is expanding, the speed of light in space must also increase. The speed of light cannot be a constant in a dynamic space. Dynamic space cannot have constant coulomb and Ampere parameters that define the speed of light.

There are many problems associated with Einstein's Special Relativity and General Relativity. Both Special Relativity and General Relativity do not run in oneway real time given by clocks, they both run on average return time of a light beam, which can only be applied off-line. The equivalence principle that the General Relativity is founded upon does not hold. A stationary object on a gravitational object is not the same as an accelerating object. There is no acceleration without motion since  $a=d^2x/dt^2$ , where 'a' is the acceleration,  $x$  is the displacement,  $t$  is the time. Newton's law of motion  $m=F/a$  does not apply for  $a=0$ , where  $m$  is the mass,  $F$  is the gravitational force, and 'a' is the acceleration. Newton's law  $m=F/a$  applies only for moving objects. Gravity and acceleration are not the same. Apple on a tree has no acceleration,  $a=0$ . A falling apple is on acceleration,  $a=g$ . Gravity and acceleration are not the same in general. Gravity and acceleration are the same for a moving object under gravity.

The Lorentz transform is not unique and hence the propagation of light is not relative [6]. Light cannot be transformed onto a moving frame uniquely. When propagation of light is not relative, it is possible for an observer inside a closed cabin to determine if the cabin is moving by using a beam of light. If you want to make a decisive claim that it is not possible for a passenger inside a cabin to distinguish if the cabin is moving or stationary, then, you must show that the

Maxwell equations are uniquely transformable onto a moving frame; this is not possible [6].

“If Galileo had known the Maxwell equations for propagation of light, Galileo would have made the claim that ‘an observer in a closed cabin can determine if the cabin is moving or stationary using a beam of light’.”

In the derivation of Lorentz factor  $\gamma$ , Einstein forced a light beam to behave as a baseball without any valid reason even though light has no mass and the massless has no momentum. In Einstein’s Special Relativity, a vertical light beam in a horizontally moving train takes a vertical path relative to a passenger in the train while it takes an angular path relative to a stationary observer on the station. A vertical light beam in a horizontally moving train at constant speed cannot take a vertical path relative to a passenger in the train since light is not relative and light cannot behave as golf balls. There is no momentum without a mass. Light has no momentum. You cannot give momentum to light by proclamation.

Observers cannot bend light and hence a light beam cannot take an angular path relative to observers irrespective of whether observers are inside a moving cabin or outside a cabin. It is only that a light beam shifts on an angular path relative to moving observers against the direction of the motion of observers while light travels at constant speed on its constant path unaltered [4].

General Relativity interpreted the space and time as a 4D space. 4D space cannot exist. We have  $x$ ,  $y$ , and  $z$  axes in space since every point on these axes are accessible. However, in the case of time, every point in time is not accessible. Time width is available only on its passing. In the case of time, neither the past nor the future are accessible. In the case of time, what is accessible is a point, the present. As a result, time cannot be an axis. An entity cannot represent an axis unless all the points on that axis are accessible. Space and time cannot be represented as a 4D space. What we have is 3D space at a point in time, the present. There are no 3D spaces staked in time. Entities in the 3D space change the positions and that change of position of entities is used to define the time. There is no time without the change of position of matter. There is no entity called ‘time’ until we define it. We define time, a year, as one orbit of the earth. Clocks are engineered to break down the time, a year, into smaller intervals. Clocks cannot change the time, a year.

In addition, in Special Relativity and General Relativity, spacetime does not mean what it sounds to be. There is space that we occupy, it is real. Then there is time we read on clocks that are engineered to break down the time, a year, into smaller intervals. Space and time are mutually independent separate entities. However, in Special Relativity, spacetime refers to the function  $t'=\gamma(t-xv/c^2)$ . In Special Relativity, spacetime is a convoluted entity of space and time. This convoluted spacetime function is not unique [6].

This convoluted spacetime function does not apply for one directional time given by clocks. This convoluted spacetime function is based on the average return time of a light beam that we do not have, that we cannot get from clocks. And also, this convoluted spacetime or relative time is not unique. The time, year, one complete orbit of earth, cannot depend on the motion of an observer. The time, a year, is not determined by clocks.

General Relativity is based on the claims that a gravitational object warps space and the amount of warp is given by the mass of the object. If a gravitational object warps space, the amount of warp must be determined by the volume of the gravitational object, not by the mass of the object. As such, in General Relativity, the gravity of an object is determined by the volume of the object, not by the mass of the object.

On the other hand, a single mass has no gravitational force to warp space. A single mass has no gravitational potential. The gravity is a result of the interaction of two masses. Gravitational force exists between masses, Gravitational potential exists between masses. A mass cannot exert a force on the massless. A mass cannot exert a force on space. A mass cannot exert a force on light. It is only a medium that can be warped by a mass or gravitational object, not the massless space. A mass cannot exert a force on massless entities such as light and space.

If the space is warpable, it is the volume of an object that can warp space without a force. It is the volume of an object that occupies space, not the mass of an object. Irrespective of the mass of the object, it is the volume of an object that determines how much space is taken by the object, not the mass of the object. Space is not warpable. Only a material medium is warpable. It is the surrounding medium that is warped by the mass of an object resulting in a density gradient surrounding the object of mass.

*“It is the medium that is warped by the mass of an object, not the space.”*

*“It is the volume of an object that determines how much space it occupies, not the mass of an object.”*

Special Relativity and General Relativity cannot hold since light is not relative. When light is not relative, the equivalence principle cannot hold. Einstein’s thought experiments do not hold when light is not relative. Einstein assumed light behaves as golf balls in order to prove light is relative; a deceitful circular argument. The gravity and acceleration are not the same when light is not relative and hence Einstein’s equivalence principle does not hold. When light is not relative and does not behave as golf balls, an observer inside a closed cabin can distinguish if the cabin is moving at constant speed, accelerating or stationary on a gravitational object.

If time is relative, time will be directional. Time cannot be directional [6]. Special Relativity is based

on the false assumption that light is relative. Light is not relative and hence, in Einstein's light beam on a moving cabin thought experiment, a vertical beam of light in a horizontally moving cabin cannot have a vertical path relative to the cabin. If light is relative, relative time is not unique. If light is relative, time is directional. If light is relative, although the Transversal Electromagnetic (TEM) waves are observer independent, it generates Shear Electromagnetic (SEM) waves whose speed depends on the frame of reference. As a result, if light is relative, the speed of propagation of light will not be constant [6].

General Relativity also claims that a mass warps spacetime. A single mass has no gravity. A single mass cannot exert a force. A single mass has no gravitational potential. Gravity is an interaction between masses. Gravitational potential exists between masses. Gravitational force exists between masses. A mass cannot exert a force on massless entities. A mass cannot create a dent on a trampoline. It is not even possible to put a mass on a trampoline. Gravity is not a property of a mass. Gravity is a result of interaction of masses. The use of a trampoline to demonstrate the warping of space by a mass is simply meaningless; it is as meaningless as pointing to the sky to explain who/what/where God is.

A single mass has no gravity. A single mass has no gravitational potential. A mass has no gravity unless it interacts with another mass. A mass cannot interact with space. A mass cannot warp space. The mass of earth cannot change time. Gravity cannot change time. A mass, gravitational object, can affect a measuring instrument, a clock, since a clock is also a chunk of mass, and as a result the display on a clock is affected by gravity, but a gravitational object has no effect on time itself. The display on a clock does not determine the time, a year. Gravity cannot change time itself or what is being measured by a clock. Time is not determined by clocks. Time is measured by clocks. Gravity affects the mechanism of a clock, and hence the display of the clock. Gravity has no effect on time itself. Gravity has no effect on frequency. Gravity has no effect on light in vacuum.

A mass cannot diffract light in the absence of a medium. A mass cannot generate a redshift or blueshift in the absence of a medium. A mass cannot exert a force on space. A mass cannot warp space. If the space is warpable, and if mass warps space and the mass is the only thing that is responsible for warping of space, can the warping of space by an object of mass  $m$  of volume  $v$  be the same as the warping of space by an object of the same mass  $m$  but different volume  $V$ ? General Relativity is nonsensical in its claim that a mass  $m$  of a gravitational object warps space since a mass  $m$  can come in different volumes and it is the volume of an object that occupies space, not the mass of an object.

If the space is warpable, the same mass with different volume cannot generate the same warp. If the space is warped by an object, the warp must be

determined by the volume of the object, not by the mass of the object. What the mass of an object warps is the medium surrounding the object. The density gradient of the medium that surrounds an object is determined by the mass of the object. It is the case with the medium surrounding the earth, with the medium surrounding a star, or with the medium surrounding any gravitational object of mass.

The claim that the mass of an object determines the warp in General Relativity is incorrect. If the space can be warped by an object, the amount of warp must be determined by the volume of the object, not by the mass. So, if space-warping determines the gravity in General Relativity, gravity is now determined by the volume of an object, not by the mass of an object. If the warping of space, as in General Relativity or in any other gravitational hole-theory suggests, determines the gravity, then, the gravity is determined by the volume of an object, not by the mass of an object. In General Relativity or in any gravitational hole-theory, an apple cannot fall directly onto earth as it does since an apple has to follow the curvature of the space in those gravitational hole-theories such as General Relativity.

Space cannot be warped. Space cannot expand or contract. A mass cannot affect massless. A mass cannot exert a force on the massless. Gravity is an interaction between masses. A single mass has no gravity. It is only a medium of matter that can be warped, not space. It is only the matter that can expand or contract, not the space. It is not space that is warped by a mass, it is a material medium in space that surrounds a mass that is warped.

General Relativity is not required to explain the bending of light near a gravitational object in the presence of a medium. What bends the light near a gravitational object is the density gradient of the medium that the object surrounds. General Relativity is not required to explain the planetary precession. Planetary precession is a result of the eccentricity vector rotation [5,7]. Special Relativity and General Relativity are not required for light to propagate at constant speed since it is the velocity of the light that is a constant not just the speed of light [4]. Speed of light on its fixed track is unaltered relative to observers. Observers cannot derail light. Observers cannot deorbit a planet. Einstein's equivalence principle is invalid since light is not relative and hence General Relativity is invalid.

Light does not travel on a geodesic since light is massless and massless are not affected by a mass. Light can travel in any direction but the geodesics or the so-called curvature of spacetime have limited direction. Light orthogonal to a geodesic cannot follow geodesics. Light has no inherent ability or mechanism to detect geodesics. Light cannot follow a curvature of spacetime or geodesics at constant speed. If light travels on geodesics or on the curvature of spacetime, the speed of light will be determined by the curvature and hence the speed of light will not be constant. The

claim that light travels on the curvature of spacetime or on geodesics is illogical and meaningless.

If a mass is in vacuum, light cannot interact with the mass unless the light hits the mass. If the mass is surrounded by a material medium, the mass generates a density gradient in the medium; this density gradient in the medium affects the light. A mass has no direct effect on light. A mass has no effect on space. Mass cannot bend light. Mass cannot warp space.

*“It is the volume of an object that takes up the space, not the mass of the object. If the space is warpable, the larger the volume, the steeper the warp. If the space is warpable, the amount of warp is independent of the mass of an object. Space is not warpable.”*

*“A mass of an object warps the material medium that surrounds the mass. Smaller the volume of the object, steeper the density gradient of the medium that it surrounds. In other words, Larger the mass density of the object, steeper the density gradient of the medium that it surrounds as in the case of a blackhole (blackpeak).”*

Light propagates on a fixed path at constant speed  $c$  means just that, light travels distance  $c$  meters for every time unit; it does not mean that distance/time ratio is a constant. Distance/time ratio does not have to be a constant for light to propagate at constant speed,  $(\text{distance}/\text{time}) \neq \text{constant}$ . Space and time are mutually independent. Mutually independent space and time do not have to be zipped up into a single entity called spacetime for light to travel at constant speed  $c$ . For an entity to be a constant, its units do not have to be a constant. Space and time do not have to zip up. You cannot draw an arrow on a paper, label it as time, and call it a dimension. Time does not have the properties required to be a dimension. There is no unique spacetime function [6].

If we have an entity that is a constant, that does not mean the units of that entity are a constant. For light to travel at constant speed  $c$ , the units, distance/time do not have to be a constant. For light to travel at constant speed, space and time do not have to be zipped up by a constant. A spacetime function is not required for light to travel at constant speed  $c$ . If light travels at constant speed  $c$ , it means just that; light travels  $c$  distance units for every time unit. There is no spacetime.

Just because light travels at constant speed, the distance itself does not have to be proportional to time in general. It is only that the distance light travels is proportional to time that the light has traveled. There is no reason for space and time to be entangled by the constancy of the speed of light. There is no spacetime function. Spacetime function is a result of a mis-transformation of Maxwell equations for propagation of light onto an inertial frame [6]. Maxwell equations for propagation of light cannot be

transformed uniquely onto an inertial frame. Space and time are independent.

There is space that we occupy. We can travel in space in any direction, forward and backward. It is we that travel, never the space. There is the time we define, a year, one orbit of the earth. We cannot travel in time. It is always the time that travels, always in one direction, never in reverse. Although there is a symmetry of time on paper, that symmetry does not exist in reality. Mathematical symmetries that exist on paper do not have to exist in reality. A theory for negatively charged electrons must also apply for a positively charged electron does not mean positively charged particles, positrons, should be real. Positrons are an experimental misinterpretation. Positrons are not real. Positrons are imaginary.

## **II. THE DOPPLER EFFECT IS FOR OBSERVER'S EYES AND EARS ONLY, AN OBSERVER PHENOMENON, NOT A PHENOMENON OF THE WAVE ITSELF; DOPPLER EFFECT IS NOT REAL**

The motion of a source cannot change the frequency, wavelength, and speed of light that a source emits. The motion of an observer cannot change the frequency, wavelength, and speed of light of a propagating wave. However, the motion of a source and/or the motion of the observer can change the number of wavelengths that an observer receives per second, which is the Doppler effect. Since the speed of light is unchanged, both frequency and the wavelength are shifted in the Doppler effect. If any effect has a change of frequency, that is an indication that the effect is not real, and it is simply an observer phenomenon that is not present in the wave itself. Source/Observer motion cannot alter a wave.

In the Doppler effect, nothing is changed in the propagating wave due to the motion of the source and/or observer; it is only that as the distance between the observer and the source changes, and as a result, the number of wavelengths the observer receives per second changes, which is an observed frequency shift. Since the speed of light is unaltered, the change in frequency must accompany a change in wavelength and vice versa.

This frequency shift and wavelength shift in the Doppler effect are for the observers only, not real. As far as the propagating wave is concerned, the propagating wave is totally independent of the source and the observer; what source or/and observer does have no effect on the propagating wave. A propagating wave is not anchored to a source, to space, or to an observer. Any entity that is anchored to a source cannot propagate. Once a light burst is out of a source, it has no attachment to the source. Any entity that is not anchored to a source and/or observer cannot be affected by the motion of the source or observer.

In the case of the Doppler effect, an observer observes both a frequency shift and a wavelength

shift. The observer motion and/or the source motion cannot change the actual frequency of a wave and as a result the frequency shift is a good indication that the Doppler shift is not real and it is for the observer's eyes only. The actual frequency and wavelength of a propagating wave is unchanged by the motion of the source and/or the observer. What an observer measures as frequency and wavelength of wave in the Doppler effect are not the actual frequency and the actual wavelength of the wave that is propagating. The speed of light, frequency, and wavelength are unchanged by the source and/or observer motion.

In the Doppler effect, although an observer can see and measure the change of frequency and wavelength, the Doppler effect cannot bend the light. To bend light, there must be a change of the speed of light. The change of the speed of light must need a change of the medium. The speed of the propagation of light is unchanged in the Doppler effect. For the change of the speed and the direction of light, there must be a density gradient of the medium and/or the change of the medium. Unlike in the Doppler effect, the change of wavelength by a density gradient of the medium and/or by the change of medium is real, not an observer's perception. The frequency is unaltered by the change of the medium and/or by the density gradient of the medium.

In the Doppler effect, although an observer measures the frequency shift and wavelength shift, there is no actual shift of the frequency and wavelength in the actual wave. The Doppler effect does not change the frequency and the wavelength of the propagating wave. The Doppler effect is an observer perception that varies from observer to observer. It is only that the observer perceives a change in wavelength since the number of wave bursts an observer receives changes with the motion of the observer, the motion of the source, or both.

The real frequency, the wavelength, and the speed of light in the space from the source to the observer cannot be observer dependent. Actual frequency, wavelength, and speed of light in space is unchanged by the motion of source and/or the motion of the observer, although the observer detects a shift of wavelength and frequency. Since the speed of light is unchanged in the Doppler effect, an observer detects the shift of both frequency and wavelength.

The change of frequency in the Doppler effect is not a result of change of time itself, it is a result of the change of the number of wavelengths received by an observer due to the motion of the source and/or the motion of the receiver while the speed of light remains constant. As a result, the observed frequency is changed in the Doppler effect. The observed frequency is not the same as the actual frequency the wave is propagating at from the source to the observer in the Doppler effect. The actual frequency the wave is propagating at from the source to receiver does not change with the motion of the source, the motion of the observer or both.

The actual frequency and wavelength of the propagating wave are unchanged in the Doppler effect. Whereas, in the case of the change of medium, the speed of light is changed, the wavelength is changed, but the frequency is unchanged in the propagating wave. The change of speed of light and wavelength shift due to the change of medium are real, not an observer's perception.

The Doppler effect exists only for the detectors or the observers, not for the propagating wave in between the source and the observer. In order to attribute the observer's detected change of wavelength to the motion of the observer, source, or both, the medium must remain homogeneous. If the medium is inhomogeneous, the speed of light varies, and as a result, the direction of light changes and the wavelength shifts due to the change of the medium, and hence the wavelength shift cannot be attributed to the Doppler effect, to the motion of the source, observer, or both.

The doppler effect does not apply in the presence of bending of light or in the presence of refraction of light. It is only the change of a medium that can bend light, or diffract light. The Doppler effect cannot bend light. The Doppler effect cannot diffract light. Light from stars in a galaxy propagates through an inhomogeneous medium on a long path to an observer on earth. The redshift of light from a star in a galaxy is a result of the change in the speed of light and the bending of light due to the change of medium and the density gradient of the medium.

When there is a change in the speed of light, which results in the refraction of light, the Doppler effect is out of the picture. The Doppler effect does not apply for the redshift of light from a star in a galaxy that undergoes speed of light changes and the bending of light on its path due to the changes in the medium and the density gradients of media. The cause of a star redshift and the bending of light near a star is the change of the medium and the density gradient of the medium.

*"Light from a star in a galaxy propagates in an inhomogeneous medium and hence the star redshift cannot be attributed to the Doppler effect."*

The observer motion and/or the source motion cannot change the actual frequency and the wavelength of the propagating light. The actual frequency and the wavelength of light on its path from a source to an observer is unaltered by the motion of a source and/or the motion of the observer. It is only the frequency and wavelength detected by an observer that are shifted in the Doppler effect, an observer's detection. The frequency and the wavelength detected by an observer in the Doppler effect is not the actual frequency and the wavelength of the wave on its path to the observer. The Doppler effect is for the observer's eyes, ears, and detecting instruments only.

*“The Doppler effect is purely an observer phenomenon, not a phenomenon of the wave.”*

In the Doppler effect, the observer detects or perceives the changes in both frequency and wavelength since the speed of light is constant and as a result of the requirement that the medium must be homogeneous for the Doppler effect to work. However, in the presence of a medium change or density gradient of a medium, it is the wavelength and the speed of light that change, the frequency of light remains unaltered. Neither a change of medium nor an observer motion, nor a source motion can change the actual frequency of propagation of light. In the Doppler effect, the measured frequency of a wave can be deceiving, it is not the actual frequency of the wave. Although a frequency shift is detected in the Doppler effect, there is no actual frequency change of the wave. If an observer detects a frequency shift, irrespective of whether the medium is homogeneous or not, it must be a result of source and/or observer motion; the frequency shift is not present in the wave itself, and it is an observer phenomenon. The change of wavelength cannot be attributed to the source and/or observer motion unless the medium is homogeneous. Wavelength shift in the presence of the change of speed of light is real, not a Doppler effect.

If there is a change of speed of light, a wavelength shift, as well as a frequency shift, then, the wavelength shift is a result of the density gradient of the medium and the observed frequency shift is a result of the motion of the source and/or observer. If it is only the wavelength shift and the speed of light shift that is present and no frequency shift is observed, then, there is no observer/source motion. Any frequency shift is an observer phenomenon due to the Doppler effect. Frequency shift is not present in the wave itself. Wavelength shift due to the change of the speed of light in the presence of a medium change or density gradient of the medium while frequency is unaltered, is real and it is a wave phenomenon, not an observer phenomenon.

Observer/source motion cannot change the actual frequency of a wave. If an observer happens to observe a frequency shift, it is a result of the observer/source motion, a Doppler effect, purely an observer phenomenon. Wavelength shift is not a frequency shift unless the speed of light remains constant. In the case of light from the stars, the speed of light varies due to the medium changes and as a result, redshift/blueshift of light from stars refer to the wavelength shift, not a frequency shift.

*“Wavelength shift is not a frequency shift unless the speed of light remains constant.”*

There is no change in frequency and wavelength without an observer in the Doppler effect. The motion of a source does not change the frequency and the wavelength of light. Once a burst of light is released from a source, the wave burst is not anchored to the source. The perceived or detected frequency of light

by an observer is relative in the Doppler effect. This relative frequency has a constant speed of light resulting in a relative shift in the observed wavelength in the Doppler effect.

If a light source is moving away from us, the apparent brightness or intensity of a star will be diminishing. If the galactic redshift/blueshift is a result of the Doppler effect, the apparent brightness of the stars having redshifts must decrease progressively with time while the apparent brightness of stars having blueshifts must increase progressively with time. The intrinsic brightness of a star is unchanged due to the Doppler effect.

So, if a star has a redshift/blueshift while the apparent brightness remains unaltered, then there is no source/observer motion. If a star has a redshift/blueshift and the apparent brightness varies, then there is a source/observer motion. If there is an observed frequency shift, then there will also be an apparent brightness variation. If there is no apparent brightness variation of a star, then there will not be any observed frequency shift and the observed wavelength shift is due to the medium variation and the density gradient of the medium. Apparent brightness variation facilitates us to determine if there is a radial motion of the stars or not. If the apparent brightness remains unaltered, then, the redshift or blueshift is a wavelength shift and it is sure to be due to the change of speed of light in the presence of a medium variation, and the frequency is unaltered.

Intrinsic brightness of a star is the rate of light burst, or the number of light bursts a source star releases, per second. The apparent brightness of a star is the number of light bursts per unit area an observer receives, and hence the apparent brightness decreases with the inverse square distance [2]. The amplitude of light is independent of the source. The claim in physics that the intrinsic brightness of a star is given by the amplitude of light is false. A supernova, a star, 1000 Watts light bulb, 10 Watts light bulb, a candle light, what do they have in common? They all have the same amplitude of light. They differ by the rate of light bursts, the intensity.

The actual frequency of light is not relative. The actual frequency of a light wave does not change with the motion of the source or observer. The actual frequency of a wave and the observer's perceived or measured frequency are not the same in the Doppler effect. The Doppler effect is purely an observer effect. The actual propagating frequency, wavelength, and speed of light are unchanged in the Doppler effect. The Doppler effect cannot be used to make the false claim that the actual frequency and wavelength are shifted due to the motion of the source and/or observer. The change of a medium and the change of the density of a medium are the only means for changing the speed of light, the direction of light, and the wavelength. The frequency is unaltered by the change of the medium and density gradient of the

medium. Actual frequency of a wave is unaltered by the source/observer motion, by the Doppler effect.

The wavelength, the speed of light, the direction of light, and the path of light are unaltered by the source/observer motion, by the Doppler effect. So we have:

1. If the apparent intensity of a light source is unchanged, there will not be a frequency shift. The Doppler effect can be ruled out completely and any wavelength shift is a result of the change of the speed of light due to the change of medium.

2. If there is a change of the apparent intensity, there will also be an observed frequency shift. This is the Doppler effect due to the motion of the source/observer. This frequency shift is simply an observer effect and is not present in the wave.

3. If frequency shift is observed while the speed of light is unaltered (homogeneous medium), then there will also be a wavelength shift as well, and these changes are due to the Doppler effect and there is a source and/or observer motion. This frequency shift and the wavelength shift are observer phenomena not present in the wave. This only applies for homogeneous media. This does not apply for the light from stars since the path is inhomogeneous. If a change of frequency is observed, it is an indication that the change is an observer phenomenon, not a phenomenon of the wave. Frequency of a wave is unaltered by gravity or by the change of medium.

4. If there is a frequency shift and a change of speed of light, then, there will also be a real wavelength shift. The wavelength shift is not a Doppler effect. The frequency shift is a result of the Doppler effect due to the motion of source/observer. The frequency shift is not in the wave itself and it is an observer phenomenon. The wavelength shift is real and present in the wave itself. It is a result of the change of the speed of light due to the change of the medium.

5. Galaxies cannot have a radial speed and hence there will not be a short term change of apparent intensities of stars relative to observers. When there is no short term change in apparent intensities of stars, there will not be a frequency shift of the light from the stars. What is present is a wavelength shift as a result of the change of the speed of light due to the change of the medium. The redshift/blueshift of a star is the wavelength shift due to the change of speed of light by the change of medium. Frequency is unaltered by a medium or gravity.

6. The redshift/blueshift of a star is the wavelength shift, not the frequency shift. The wavelength shift is due to the change of speed of light by the density gradient of the medium while the frequency remains unaltered.

*Definition: Intrinsic Brightness of a Star*

*The intrinsic intensity or the brightness of a star is the rate at which the light bursts are emitted by a star.*

*Corollary:*

*The intrinsic amplitude of light of a source at a given frequency is source independent.*

If there is a moving truck carrying a machine that fires tennis balls at a constant rate, and there is no observer to observe it, the rate of the tennis balls firing is unchanged irrespective of the motion of the truck. The rate of the tennis balls the machine fires is independent of the speed of the truck. There is no approaching or receding tennis ball firing machine without an observer. If the truck carrying the tennis ball firing machine approaches an observer, the observer collects more tennis balls per second although the rate of tennis balls firing of the machine is unchanged. The Doppler effect is observer eyes and ears only. The Doppler effect does not change physical reality. The Doppler effect does not change the tennis balls firing rate of the machine. The Doppler effect changes the number of tennis balls an observer can collect per second.

There is no approaching or receding ambulance without an observer. The frequency and the wavelength of the siren of the ambulance does not change whether there is an observer to observe or not. There is no Doppler effect without an observer. The Doppler effect does not change the actual frequency and wavelength of the wave from the siren that is propagating. It is only that there is a frequency and wavelength shift in what the observer observes or measures. The Doppler effect is for the observer's eyes and ears only. The Doppler effect is not real.

### III. WHAT HAPPENS WHEN LIGHT TRAVELS THROUGH LOWER DENSITY MEDIUM INTO HIGHER DENSITY MEDIUM

*"Source/Observer motion cannot change the speed of light, direction of light, frequency, and the wavelength."*

*"Gravity cannot change the speed of light, direction of light, frequency, and the wavelength. Gravity has no effect on light in the absence of a medium, in a vacuum."*

*"In the presence of a medium, gravity generates a density gradient in the medium, which affects the speed of light. It is the density gradient of a medium that changes the speed of light, which results in bending of light and shifting of the wavelength. Frequency is unaltered by the change of the medium."*

Consider a beam of light propagating at speed  $c$  with frequency  $f$  and wavelength  $\lambda$  in a vacuum entering a medium. The change of medium or the change of medium density changes the speed of light. When light enters a higher density medium from a lower density medium, the speed of light decreases. Similarly, when light enters a lower density medium from a higher density medium, the speed of light

increases. The speed of light in the vacuum is the highest speed of light.

When light is propagating in a medium, if the medium is pulled out, light does not move with the medium; light remains in the space propagating, which is an indication that the light always propagates in space, not in the medium. Light does not propagate in the medium itself. Light propagates in space even in the presence of a medium.

However, the propagation of light in space is affected by the presence of a medium. A dense medium is always present near the gravitational objects such as stars and planets. The more massive the star is, the denser the medium it surrounds and higher the density gradient. Both the speed of light and the direction of light are affected by a medium. The velocity of light, not just the speed of light, is affected by the change of the medium and the density gradient of the medium. The change of the medium and the density gradient of the medium alters the direction of light or bends light. The change of the medium and the density gradient of the medium changes the speed of light, which leads to the refraction of light.

The speed of light is determined by the vacuum and affected by a medium. The change of the medium changes the velocity of light. The denser the medium is, lower is the speed of light, and larger the bend or the change of the direction of light. The speed of light in a lower density medium is higher than the speed of light in a higher density medium. The medium density inversely affects the speed of light, while the change of the direction of light or the bend is directly affected by the change of the density of the medium or by the density gradient.

How old we are determined by the number of years we have lived. A year is defined as one single orbit of the earth. Clocks do not determine how old we are. One orbit of the earth is not changed by the speed of clocks. The time it takes for the earth to make one orbit is independent of the mass of the earth or the earth's gravity. The time, a year, is independent of the clocks irrespective of what the mechanism of the clocks are. We do not get old differently because our clocks run faster or slower. Speed of clocks cannot change the time, a year. Time, a year, has nothing to do with the speed of light. Whether light travels slower or faster is immaterial for the time, a year, or for a one complete orbit of the sun.

Time is unaffected by the change of the medium and the change of the density of the medium. The time, a year, is not determined by clocks, time is measured by clocks. A clock is an engineered measuring instrument. Clocks are engineered to break down the time, a year, into smaller manageable intervals. Clocks cannot change the time, a year. If the time on a clock appears different in different physical environments, it is because the clock has not been designed to measure the time in different environments. Every engineered measuring

instrument is biased, it is biased to the environment the instrument is in; clocks are no exception.

Time period of a wave is unaffected by a medium. Time period of a wave is unaffected by gravity. The frequency of light is unchanged by the change of the medium or the change of the density of the medium since frequency is determined by time period, which is medium and gravity independent.

*"Frequency of light is unaffected by a gravitational object irrespective of whether the object is surrounded by a medium or by a vacuum. The speed of light changes with the change of the density of the medium, which in effect diffracts (bends) light and shifts the wavelength. The frequency is unaltered."*

The change of a medium and a density gradient of a medium is the only means to shift the actual wavelength and the speed of light since the speed and the direction of light can only be altered by a medium. The motion of the observer and/or the motion of the source cannot change the actual propagating speed, direction, and the wavelength of light since the observer motion and/or the source motion cannot determine the speed and the direction of light. Propagation of light is not relative.

Light propagates at a constant velocity  $c$  in the vacuum, and the velocity of light  $c$  is affected by the medium. Consider a light wave of frequency  $f$  and wavelength  $\lambda$  propagating in a vacuum at speed  $c$  enters a medium. Light wave is now propagating in a medium at the speed  $c_m$  with wavelength  $\lambda_m$ . Since the time period of a wave in a vacuum is unaffected by the presence of a medium, the frequency of the wave remains  $f$  for both the vacuum and the medium. The actual frequency of the wave is unaffected by medium and gravity. As a result, we have,

$$c=f\lambda \text{ (in the vacuum under gravity) (3.1)}$$

$$c_m=f\lambda_m \text{ (in a medium under gravity) (3.2)}$$

$$c/c_m=\lambda/\lambda_m \text{ (3.3)}$$

The speed of light in a medium is slower than in the vacuum,  $c/c_m > 1$ , hence,

$$\lambda/\lambda_m > 1 \text{ (3.4)}$$

$$\lambda_m < \lambda \text{ (3.5)}$$

The wavelength of light in a medium is shorter than the wavelength of light in a less denser medium or in the vacuum; the frequency  $f$  is unaltered by the medium and gravity.

Now, we start with a wave of frequency  $f$  and send it through a dense medium; the received wavelength of light of frequency  $f$  in the dense medium is  $\lambda_m$ ; it travels at speed  $c_m$  and  $\lambda_m < \lambda$ . If we directly compare the wavelength  $\lambda_m$  in the dense medium to the wavelength  $\lambda$  in the vacuum, we know that there is a blueshift.

If we want, we can compare this change of wavelength in frequency too. All we have to do is find

out the corresponding frequency  $f_m$  if the wavelength of  $\lambda_m$  propagates at the speed of light  $c$  in the vacuum. So, we have the speed of light  $c$  in the vacuum as the common base to compare. We can find the frequency  $f_m$  if we have the light of wavelength  $\lambda_m$  traveling at speed  $c$  in a vacuum. It is important to note that this frequency  $f_m$  is an artificial construct just for hypothetical comparison if the speed of light remained unchanged, but in reality, the speed of light changes when medium changes. Frequency  $f_m$  does not exist in reality. Frequency is never changed when light propagates from one medium to another or when there is a change of density of the medium, or in the presence of gravity.

Since we are more used to comparing the shifted wavelength  $\lambda_m$  as a shifted frequency  $f_m$ , we artificially represent the shifted wavelength  $\lambda_m$  as an imaginary shifted frequency  $f_m$  if the shifted wavelength  $\lambda_m$  happens to propagate at speed  $c$  in the vacuum although the shifted wavelength  $\lambda_m$  never traveled at speed  $c$  in the vacuum. So, if a wave of shifted wavelength  $\lambda_m$  is traveling in the vacuum at the speed  $c$ , the hypothetical shifted frequency  $f_m$ , is given by,

$$c = f_m \lambda_m \quad (3.6)$$

$$f_m = c / \lambda_m \quad (3.7)$$

From equation (3.1), we have,

$$f = c / \lambda \quad (3.8)$$

From equations (3.7) and (3.8),

$$f_m = (\lambda / \lambda_m) f \quad (3.9)$$

Since  $\lambda_m < \lambda$ , we have,

$$f_m > f \quad (3.10)$$

This is also equivalent to keeping the speed of light in the dense medium the same as the vacuum and allowing the frequency to change, which is also equivalent to hypothetically letting the time period contract resulting in a frequency shift. It is just a different interpretation that does not happen since time is unchanged from one medium to another medium, and the speed of light does not remain constant when light enters from one medium to another medium.

Time is absolute. There is no actual time contraction here. There is no frequency shift here. When light propagates from a lower density medium to a higher density medium, the actual shift is just the speed shift and the wavelength shift. Wavelength shift is not a frequency shift. Wavelength shift takes place when light enters from one medium to another since the speed of light changes from one medium to another while the frequency remains unchanged.

The actual shift is in the wavelength. There is no frequency shift when a wave goes through a medium change. It is that the wavelength shift can also be compared hypothetically in the frequency domain if the speed of light is assumed to remain unchanged

with change of medium, which actually does not happen in reality; the speed of light changes with the change of medium while frequency remains unaltered.

Allowing time to change is not real. It is the speed of light that changes from one medium to another, not the time. It is only when we want to compare the received wavelength  $\lambda_m$  in a different medium to the wavelength of the shifted frequency  $f_m$  in the vacuum that we can use  $f_m = c / \lambda_m$  to obtain the comparable shifted hypothetical frequency  $f_m$ , which can be compared, under a common base of speed  $c$  in the vacuum, for the unshifted frequency  $f = c / \lambda$ , where  $c$  is the vacuum speed of light and  $\lambda$  is the vacuum wavelength.

There is no time dilation here. Star redshift and blueshift are real, not a result of an observer's perception, whereas the Doppler effect is an observer perception that varies from observer to observer. Star redshift and blueshift cannot be a Doppler effect. Light travels from a star to earth in an inhomogeneous medium and hence the Doppler effect does not apply. The Doppler effect requires the medium to be homogeneous.

We are using the frequencies for the shifted wavelengths as if they are all propagating at the same speed  $c$  in a vacuum to have a common comparison base for all the frequencies. In reality, the frequency of a wave does not change when a wave travels into a different medium. It is only the wavelength and the speed of light that change as waves travel into a different medium, not the frequency.

The comparative frequency  $f_m$ , which is the frequency if the wave of wavelength  $\lambda_m$  propagates in a vacuum at speed  $c$ , calculated as  $f_m = c / \lambda_m$ , increases when light enters from a low density medium to a higher density medium,  $f_m > f$ . The comparative frequency  $f_m$  is not the actual frequency of the wave, it is a hypothetical frequency; the actual frequency  $f$  is unchanged by the change of medium. This is not a time contraction. It is simply a result of using the constant speed of light  $c$  in a vacuum as the comparative base for both frequencies  $f_m$  and  $f$ .

The time, a year, is defined as one single orbit of the earth. If we mark one position on the orbit and wait until the earth reaches the same marked position on the orbit, then we say we have waited what we called a year, the time. It is we who orchestrated an entity called time. There is no entity called time until we define it. We can find objects of mass, but we cannot find an entity called time anywhere until we define it. We use the motion of earth on its orbit to define time. Martians may use one orbit of Mars as Martian year. Martians may engineer clocks to break down Martian year into the intervals of their choosing. We use the earth year.

The time, a year does not change when we break the year into more manageable intervals of hours, minutes, and seconds using the instruments called clocks that we engineer. Clocks do not define time, a

year. Clocks do not decide our age. We do not get old by the clock. Clocks do not determine how long we live. If you live on Mars, you will age in Mars years. Clocks designed to break down a Mars year will not be the same as the clocks that are designed for earth year. Clocks do not decide the time, a year. Clocks are engineered to break down the time, a year, into hours, minutes, and seconds. Clocks cannot change the time, a year. Our age does not depend on clocks.

Frequency does not change when light travels from one medium to another. It is the wavelength and the speed of light that change. It is only if we force the speed of light to remain the same for both mediums just for a hypothetical frequency comparison that a hypothetical frequency shift occurs when light travels from one medium to another while the speed of light is forced to remain constant in our calculation, not in reality.

*“If we force the speed of light to remain unaltered when light propagates from one medium to another, we can make the imaginary representation of the change as a frequency shift and a wavelength shift. This representation is not real since it is the speed of light that changes when light propagates from one medium to another while the frequency remains unaltered.”*

Lemma:

*Star redshift/blueshift refers to the wavelength shift. Star redshift/blueshift is not a frequency shift. Frequency is unaltered.*

Gravitational object generates a density gradient in the medium surrounding the object. Light is unaffected by gravity. However, light is affected by the density change of the medium surrounding a gravitational object. We have seen the effect of light due to the change of medium. It is the same phenomenon when a gravitational object generates a density gradient around the medium. Any wavelength shift is due to the densities change, not a result of so-called gravitational time dilation. There is no such thing as gravitational time dilation. The time, a year, is unaffected by the clocks and the gravity. Gravity has no effects on time. Gravity has no effect on the massless.

Gravity cannot alter time. The wavelength of light is blue-shifted when light enters a higher density medium from a low density medium. It is the speed of light and the wavelength that shifts, not the frequency. Similarly, the wavelength of light is redshifted when light enters a low density medium from a high density medium. It is the density gradient of a medium that determines the blueshift or redshift of light.

It is always the wavelength that shifts, never the frequency. Frequency is predetermined by the source. We just make a hypothetical reinterpretation of the wavelength shift to see what the frequency should be if the shifted wavelength travels at speed  $c$  in a vacuum just for comparison. There is never a real shift of frequency. Frequency is unaltered by the change of

medium. Frequency is unaltered by the gradient of a medium. Frequency is unaltered by gravity. Gravity and source/observer motion cannot alter the actual frequency of a wave. It is always the wavelength that shifts as a result of the change of the speed of light due to the presence of a density gradient of the medium or the change of the medium. Even the shift of frequency in the Doppler effect is only for the observer's eyes and ears only, not real; it is an observer phenomenon, not a wave phenomenon.

Lemma:

*If light propagates in the direction of increasing density of the medium, the wavelength of light decreases, or light is blue shifted. If the light propagates towards a decreasing density of the medium, the wavelength of light increases, or light is redshifted. The frequency is unaltered.*

When light moves towards a gravitational object, the light is propagating in the direction of increasing density gradient of the medium and hence the wavelength is blue shifted, and when light is propagating outward from a gravitational object, the light is propagating in the direction of decreasing density gradient and hence the light is redshifted.

One may misinterpret this behavior of light near a gravitational object in the presence of a medium, and make the false claim that light is red/blue shifted by gravity as it had been done in General Relativity and Modern Physics. However, this claim that gravity redshifts/blueshifts light is completely false; it is a total misinterpretation of reality. This is one of the major fallacies of Modern Physics that originated with Einstein's Relativity. Gravity cannot redshift/blueshift light. There is no redshift/blueshift of light near a gravitational object in a vacuum, in the absence of a medium. Gravity cannot alter the frequency of a wave even in the presence of a medium.

If the mechanism of a clock is based on the travel time of a beam of light, then the reading on that clock depends on the speed of light where the clock is at. If the clock is in a dense medium near a gravitational object, the speed of light slows down and hence, the clock with that special mechanism slows down due to its speed of light dependent mechanism; it is not a slowing of time itself near a gravitational object. It is a slowing of time due to the slowing of speed of light due to the increased density of the medium near a gravitational object. This mistake would have been avoided if the experiment had been done in a vacuum. There would be no slowing of a clock near a gravitational object in the vacuum, in the absence of a medium, if the direct gravitational effect on the clock as a chunk of mass is disregarded.

A clock with any mechanism is also affected by gravity since the clock as a chunk of mass is affected by gravity. The force on a clock varies with the mass of the clock and the distance of the clock from the gravitational object. The force on the clock affects the mechanism of the clock and hence the display on the

clock. No clock, no measuring device, no engineered device performs equally in different environments. For a proper operation of a clock, the clock must be in an environment specified in the design specifications given in the manual.

The claim that gravity slows time in General Relativity and in Modern Physics is false, simply nonsensical. The claim that the time slows by gravity is false since there is no slowing of speed of light near a gravitational object in the vacuum, in the absence of a medium. This mistake would have been avoided if the Pound-Rebka experiment had been done in a vacuum. You cannot observe the refraction of light near the sun during an eclipse and blindly claim that gravity bends light, because it is the density gradient of the medium that surrounds the sun that bends light. You cannot misinterpret this fact just because you are desperate to prove General Relativity is correct. General Relativity is a false theory in its inception since light is not relative. Gravity has no effect on light. Gravity has no effect on the massless.

Lemma:

*The frequency of light is unchanged by the density gradient of a medium, by the change of medium, and by the motion of the source/observer.*

Lemma:

*The frequency, wavelength, the speed, the direction, and the path of light are unchanged by a gravitational object in the vacuum (in the absence of a medium) and by the motion of the source and/or the observer.*

Lemma:

*Gravity has no effect on light or on the massless.*

You cannot use the Doppler effect to claim that the wavelength and frequency of light are shifted with the relative motion of the source, observer, or both, because actual frequency and wavelength of light on its path do not change due to the relative motion of a source or observer in a homogeneous medium. In the Doppler effect, the frequency shift and wavelength shift are only observed in the observer measurement; this measurement varies from one observer to another depending on the speed of the observer. If the measurement varies from one observer to another depending on the motion of the observer, it is an indication that the measurement is not the actual value of what is being measured.

The Observed frequency and wavelength in the Doppler effect are not the actual frequency and wavelength of the wave that is propagating from the source to the observer. In the Doppler effect, by observing the shift of frequency, an observer can conclude with certainty that there is a relative motion of the source, the observer, or both if and only if the medium is homogeneous.

An observer cannot say anything about the actual frequency and wavelength of the wave from the

observer's measurements unless there is no Doppler effect or the source speed and the observer speed are known. The observed frequency in the Doppler effect is not the actual frequency of the wave that is propagating. It is only if the medium is homogeneous that we can attribute the wavelength shift to a Doppler effect.

Lemma:

*It is the measuring instruments that are relative, not what is being measured. It is the clocks that are relative, not the time itself.*

*"The change of time itself is not required for the change of frequency of a wave. The ability to shift the frequency of a wave electronically is a testimony to that."*

The brightness or the intensity of a light source is the number of light bursts a source emits per second or the rate of light burst of a source [2]. Higher the rate of light bursts of a source, brighter the source. As a result, in the Doppler effect, if the source is moving towards the observer and/or the observer is moving towards the source, the number of light bursts the observer observes per second is higher even though the burst rate of the source is unchanged, and hence the source appears brighter for the observer. In other words, if the observer observes a blueshift in the Doppler effect, the source appears brighter for the observer even though the actual brightness of the source is unchanged. The apparent brightness of a source increases with the blueshift in the Doppler effect.

Similarly, if the source is moving away from the observer and/or observer is moving away from the source, the number of light bursts an observer receives per second is reduced, and as a result, the source appears dimmer for the observer. In other words, if the observer observes a redshift in the Doppler effect, the source appears dimmer to the observer although the actual brightness of the source is unchanged. The apparent brightness decreases with the redshift in the Doppler effect. The actual intensity or the brightness of a source, the intrinsic brightness is unchanged with the Doppler effect.

Lemma:

*The apparent brightness of a source varies with the blueshift/redshift observed in the Doppler effect. The apparent brightness increases with the Doppler blueshift while the apparent brightness decreases with the Doppler redshift. Intrinsic brightness of the source is unchanged in the Doppler effect.*

## **VI. WHAT HAPPENS WHEN LIGHT PROPAGATES TOWARD OR AWAY FROM A GRAVITATIONAL OBJECT IN THE PRESENCE OF A MEDIUM**

Gravitational objects are surrounded by mediums. The accumulation of gas and dust around a star increases with time leading to an increase in medium

density around a star over time. Larger the mass of an object, denser the medium that surrounds it, and the density of the medium increases over time due to the ejection of more material by the gravitational object itself as well as the attraction of more and more foreign material over time. It is this medium that surrounds a gravitational object that plays a role in the propagation of light near a gravitational object or an object of mass. It is this medium that is responsible for the refraction of light and redshift/blueshift of wavelength. Frequency of light is unaltered.

Higher the mass density of an object, higher the density of the medium it surrounds and higher the change of the density with the distance, and as a result more significant is the effect of the density gradient of the medium on the propagation of light. It does not matter how large a star (a mass) is, a star (a mass) has no effect on the propagation of light in the absence of a medium. It is a medium that mediates a secondary interaction between the propagation of light and a gravitational object. Gravity has no direct interaction with light. There is no gravity without the interaction of masses.

A mass can exert a gravitational force only on another mass. Since the force exerted by a mass on another mass varies with the distance between the masses, the gravitational object generates a density gradient in the medium surrounding the gravitational object. The earth generates a density gradient in the medium, the air, surrounding the earth. The density of air is thinner on a mountain compared to the sea-level. The density of the medium surrounding the earth can increase over time due to the ejection of material by earth into the medium as well as the attraction of foreign materials. A star in a distant galaxy generates a density gradient in the medium surrounding the star, and that density gradient decreases as the distance from the star increases.

If an electromagnetic wave burst travels upward from earth, it is traveling in the direction of a decreasing density gradient. As we have seen before, when electromagnetic waves travel in the direction of a negative density gradient of the medium, it leads to a red shift. In the absence of a medium, there is no density gradient and hence there is no change of the speed of light irrespective of the direction of the light, and hence there is no wavelength shift in the absence of a medium.

If there is no medium surrounding the earth, there will be no redshift for a wave traveling outward from the earth; it is the same for the sun or any object of mass. If there is no medium surrounding the earth, or if the earth is in a vacuum, there would be no redshift or blueshift of light, no refraction of light for the light propagating near the earth in a vacuum. If there is no medium surrounding the star-A, or if the star-A is in a vacuum, there would be no redshift, no refraction of light from that star-A. There is no refraction of light from other stars passing near the star-A in a vacuum.

If an electromagnetic wave propagates from the floor of a building towards the top floor of a highrise building, that electromagnetic wave is traveling outwards from the ground in the direction of a decreasing medium density or negative density gradient of a medium. As we have seen, when light travels in the direction of a decreasing medium density, light undergoes a redshift. In the absence of a medium surrounding the earth, light traveling from the floor of a highrise building towards the top floor of the building is not subjected to a redshift.

Similarly, if an electromagnetic wave propagates towards the ground from the top of a highrise building, light travels towards the ground in the direction of an increasing density of the medium or towards a positive density gradient. As we have seen, when light travels in the direction of an increasing medium density, light undergoes a blue-shift. In the absence of a medium surrounding the earth, light traveling from the top of a highrise building towards the ground is not subjected to a blueshift.

This is exactly what is observed in the Pound-Rebka experiment. Pound and Rebka blindly misinterpreted their experimental observations. The Pound-Rebka experiment results have nothing to do with Special Relativity, General Relativity, or space warping. Pound-Rebka experimental observation is not a result of a direct effect of gravity on light; it is simply a result of a secondary effect of gravity in the presence of a medium due to the effect of gravity on the medium surrounding a gravitational object. Gravity generates a density gradient in the medium it surrounds, and the density gradient alters the speed of light resulting in refraction of light and a wavelength shift. If the Pound-Rebka experiment had been carried out in a vacuum, they would not have observed a redshift or a blueshift. It is the wavelength that is redshifted or blueshifted. The frequency is unaltered.

Since the Pound-Rebka experiment had been carried out from a four story building, they would have carried it out in a vacuum tube easily, in which case they would have not observed a redshift or a blueshift. They would have carried out the experiment easily in a vacuum tube, but if they had carried out the Pound-Rebka experiment in a vacuum tube, they would not have been able to prove what they intended to prove. Their intention was to validate the claim in General Relativity that gravity shifts frequency by any means, by whatever the means it takes. There is no credit for disproving things. Everybody tries to prove things even with misinterpretations. It appears as if they have purposely avoided carrying out the experiment in a vacuum in order to substantiate the false claim in General Relativity that gravity affects time and generates a frequency shift. Gravity has no effect on the time, a year. Gravity does not alter time, a year. Gravity cannot affect light in a vacuum. Gravity cannot bend light in a vacuum. Gravity cannot shift the wavelength in a vacuum. Gravity cannot alter frequency irrespective of whether a medium is present or not. Clocks do not determine time. Clocks break

down time, a year, into smaller intervals. Change of the clocks may alter the reading on the clock, but the reading on a clock does not alter time itself.

“If the Pound-Rebka experiment had been carried out in a vacuum tube, there would not have been a redshift or blueshift.”

Gravity has no effect on massless entities. Gravity has no effect on light in a vacuum. Gravity has no effect on time, a year. It is not the gravity that bends light. It is not the gravity that generates a redshift or blueshift depending on whether light is outgoing or incoming. It is the medium surrounding a gravitational object that is affected by gravity. The propagation of light is affected by the density gradient of the medium that is created by gravity in the presence of a medium. Gravity has no direct effect on light, on massless entities. The speed of light, the direction of light, and the wavelength are unaltered near a gravitational object in a vacuum. The frequency is unaffected by the change of a medium, by gravity, or by the motion of the source and/or observer.

Lemma:

*There is no redshift/blueshift of wavelength, or refraction of light near a gravitational object in a vacuum, in the absence of a medium. Frequency is unaffected by the change of medium, gravity, and the motion of source and/or observers. Gravity has no direct effect on light, the massless. Gravity cannot bend light. Gravity cannot slow down the time, a year.*

## V. THE REAL CAUSE OF STAR REDSHIFT AND BLUESHIFT

Assume we are, here on earth, observing a star of mass  $M$  in a distant galaxy and the mass of the earth is  $m$ . Each object in a galaxy is surrounded by a medium just as the earth is surrounded by a medium. This medium surrounding an object is increasing in density over time as more and more materials are ejected into the medium by the object. So, for the light emitted from a star in a galaxy to reach us on earth, first, light has to pass through the density gradient surrounding the star. Then, the light has to pass through any medium that the light encounters in between the medium of the star and the medium of the earth. And finally, when that light enters the earth, light has to pass through the density gradient surrounding the earth.

If both the star (the source) and the earth (the observer) are in vacuum, propagation of light is unaffected, and there would be no shift in the wavelength or the speed of light. Light has no mass. Gravity does not affect the light or any entity that is massless. There is no gravitational force without the interaction of two objects of mass. There would be no redshift, blueshift, or refraction of light from the star if the space between the star and the earth is a vacuum.

However, the space between the star and the earth is not a vacuum. Gravitational objects are surrounded by gas and dust, a medium. Every star is surrounded

by a medium. Every planet is surrounded by a medium. So, light from a star has to at least go through two density gradients before it reaches an observer on earth; a decreasing density gradient at the source star and the increasing density gradient on earth, where the observer is, and also any variation of the medium or density gradient of a medium in between from the source star to the destination earth.

When light leaves a star in a distant galaxy, it is propagating in a decreasing density gradient and hence light is subjected to a redshift. When the light enters the earth, light is propagating towards an increasing density gradient and hence light is subjected to a blueshift.

If the mass of the star in the distant galaxy is greater than the mass of the earth, or  $M > m$ , which is indeed the case, then, the density gradient of the medium surrounding the star would be larger than the density gradient surrounding the earth. And as a result, if we disregard the effect of the density gradient changes in between, the received light by an observer on earth has a net redshift. On the other hand, if the mass  $M$  of the star in the distant galaxy is less than the mass of the earth  $m$ , or  $M < m$ , (which is highly unlikely) then, the density gradient of the medium surrounding the star would be smaller than the density gradient surrounding the earth. And as a result, if we disregard the effect of the density gradient changes in between, the received light by an observer on earth has a highly unlikely net blueshift.

A blueshift of light from a star is highly unlikely since stars are much heavier than the earth and as a result the density gradients of the medium near the stars are much higher than the density gradient of the medium near the earth, except in some extraordinary circumstances. When light passes through in between medium changes and density gradients of medium on its path from a star to earth, the net intermediate density gradient may be such, the overall net density gradient from the star to earth is positive, which result in a blueshift as in the case of stars from Andromeda galaxy. So, a blueshift of light from a star in a galaxy is quite rare, but it is quite possible. A redshift of light from a star in a galaxy is a quite common occurrence since the media surrounding the stars are much more dense than the medium surrounding the earth due to the heavy masses of the stars compared to the mass of the earth.

If the density gradient surrounding a star, the density gradient surrounding the earth, and the density gradients of the medium in between are such, the redshift gained when light leaving the distant star cancels the blueshift the light gained in between and when arriving on earth, then, no frequency shift will be observed. So, there is also a possibility that no redshift or blueshift can be observed from some stars in some galaxies.

The owner of the redshift or the blueshift of light from a star in a galaxy is the star itself, not the galaxy the star resides in. If we observe a redshift from one

star in a galaxy, that does not mean we are going to observe the same redshift from all the other stars in the same galaxy. The redshifts of light from different stars from the same galaxy are different and as a result the redshift of a star from a galaxy cannot say what is happening to the galaxy in general. The redshift of a star in a galaxy cannot be attributed to the galaxy itself. It is the same for the blueshift. The blue shift from a star in a galaxy cannot say what is happening to the galaxy in general since the blueshifts from different stars from the same galaxy are different.

The redshift or blueshift observed may vary from star to star within the same galaxy. The redshift from a star in a galaxy cannot be used to claim that the galaxy is moving away from us since the redshift from different stars in the same galaxy are different. In fact, while the light from some stars in a galaxy have different redshifts, there can be other stars in the same galaxy that have different blueshifts.

In fact, light from a star will encounter many different media and many different density gradients on its path from star to earth during the many light years it travels. As a result, the net density gradient between the star and the earth is either positive, negative, or null. It is not possible to make a comparison about the mass of the star with the mass of the earth from the wavelength shift. However, it is possible to make a claim about the net density gradient of the in-between media since the density gradient of the medium near a star is much higher than the density gradient of the star near the earth. If the light is blueshifted, it is a clear indication that it is not the density gradient of the star and the density gradient of the earth that light has passed through, light also has passed through a dominant positive density gradient in-between.

As a result, we may observe the light from some stars in galaxies with redshifts, light from some stars in galaxies with a blueshift, and light from some stars in galaxies with no wavelength shift. The wavelength shift of light from a star in distant galaxy we observe is determined by the change of the medium density gradient from the star to the observer on earth, which includes the change of the medium density gradient near the star, the change of media and medium density gradient along the path in between the star and earth, and the change of media and the change of medium density gradient on earth, where the observer resides.

The change of medium or a medium density gradient does not affect the frequency. There is no frequency shift as a result of the changes in the medium. It is only the direction of light, the speed of light, and the wavelength that are affected by the change of medium and the density gradient of a medium, and they get shifted as light propagates along the path in a medium near a gravitational object.

We are more akin to the comparison of frequencies than wavelengths. We like to compare the wavelength shift as if it is a frequency shift if the wave with shifted

wavelength travels at the speed of light  $c$  in a vacuum. We generate an artificial hypothetical frequency shift corresponding to the shifted wavelength by assuming the shifted wavelength travels in a vacuum at the speed of light  $c$  only for the comparison purposes. This artificial frequency shift is not real and it only appears when we calculate the frequency of the shifted wavelength if the wave of the shifted wavelength travels in a vacuum. The wave of the shifted wavelength never traveled in a vacuum. The wavelength got shifted because of the change of the speed of light when the light traveled in a changing medium or changing medium density. There is never an actual frequency shift of light.

*“A change in a medium, a change in medium density, or gravitational object cannot shift frequency. A gravitational object has no effect on light in a vacuum.”*

It is only in the Doppler effect one can observe both frequency shift and a wavelength shift since the speed of light is unchanged. Those shifts observed in the Doppler effect are not actual frequency and the wavelength of the wave. The observed and measured frequency shift and wavelength shift in the Doppler effect is only for the observer's eyes only. The actual frequency of a propagating wave is never shifted by the motion of the source and/or observer. The actual frequency and the wavelength of light that is propagating are independent of the observer motion and independent of the source motion. What we measure is not what they actually are in the Doppler effect.

Since the medium between a star in a galaxy and the earth is inhomogeneous and varies from star to star, redshifts from different stars in the same galaxy are not the same, and hence a redshift of a star cannot be attributed to the redshift of the galaxy itself. A redshift of a star cannot be attributed to the Doppler effect since the medium light travels from star to earth is inhomogeneous. There are no actual changes of frequency and wavelength in a Doppler effect. What observers detect in the Doppler effect is not what is really there.

*“Actual frequency and wavelength of a propagating wave is unaffected by the source and observer motion.”*

If we measure the speed of propagation of light on its fixed path, it will be independent of observers. If we measure the number of wave bursts, it will be relative, observer dependent. If we measure the speed of wave bursts, it depends on the observers. The speed of propagation of light on its track within a burst is unaltered, and the speed and direction of propagation of light on its fixed path are independent of the observers [4].

The speed and direction of a train on its fixed track is independent of observers. Observers cannot derail a train. It is the path that shifts relative to observers without altering the direction of light and the speed of

light on its path [4]. The direction and the speed of light on its fixed path remain unaltered relative to observers. It is the train track as a whole that moves relative to observers, not the train itself. The direction of the train and the speed of the train on its track remain unaltered relative to observers. Light is not relative. Time is not relative.

Lemma:

*The redshift or blueshift observed may vary from star to star within the same galaxy. While some stars have increasing redshift, some other stars may have decreasing redshift.*

There is no frequency shift of light near a gravitational object. Wavelength shift near a gravitational object in the presence of a medium is due to refraction. One may hypothetically represent this wavelength shift as a frequency shift if one assumes that the shifted wavelength travels in a vacuum at the speed of light purely for comparison of frequencies. However, this hypothetical frequency shift cannot be attributed to a shift of time itself near a gravitational object.

If we amplitude modulate the frequency of a wave with a wave of another frequency and then filter the result with a bandpass filter, what we get is a frequency shifted wave. We can shift the frequency of a wave electronically. By shifting the frequency of a wave, we are not shifting the time itself. We cannot change the time itself just by shifting the frequency of light. If the shift of the frequency of a wave does mean the shift of time itself, then, we have the ability to slow down the time electronically; this shows the mockery of the claim that a redshift/blueshift near a gravitational object is a result of the shift of time itself by gravity.

Frequency of light is never shifted near a gravitational object irrespective of whether there is a medium or not. It is only the wavelength that is shifted near a gravitational object in the presence of a medium. This shift of wavelength is not a result of a gravity slowing down time. Gravity has no effect on light or time, the massless. There is no redshift or blueshift of light near a gravitational object in a vacuum.

## **VI. THE UNIVERSE IS NOT EXPANDING OR ACCELERATING: SPACE CANNOT EXPAND**

Different stars in the same galaxy do not have the same redshifts and hence the redshift of a star cannot be attributed to a radial motion of the galaxy. Since a redshift of a star in a galaxy cannot be attributed to the galaxy, there will be no radial motion of galaxies. When there are no radial motions of galaxies, there is no reason for claiming the universe is expanding. The concept of expanding the universe is meaningless, and there is no justification for it.

Stars with blueshifts and redshifts can also occupy the same galaxy. The presence of star blueshift contradicts the claim that the star redshift is a result of

a universe expansion. The concept of expanding space cannot generate both star redshift and star blueshift. Expansion of space cannot be the cause of both galactic redshift and blueshift. The cause of the star redshift must also be the cause of star blueshift. Expanding universe is not the cause of star redshift and star blueshift. Space cannot expand.

When Hubble observed a galactic redshift, he mistakenly interpreted the redshift as a Doppler effect. He falsely concluded that the redshift is a result of radial motion of galaxies even though there is no valid reason to assume why galaxies should radially move away from earth. Why should the earth have anything to do with galactic motion? Others tried to justify that the earth has no special place in the radial motion of galaxies. They did this by laying the galaxies on the surface of a balloon and blowing the balloon and demonstrating that the distances between all the galaxies are expanding, and the further the galaxies are away faster the expansion. Hubble's misinterpretation of the redshift of a star in a galaxy as a radial speed of the galaxy, together with his linear relationship of speeds versus distances graph also give the false impression that the further the galaxies are, the faster they are moving. They made an attempt to justify this by placing galaxies on the surface of a balloon and blowing the balloon.

The problem is that it is not possible to demonstrate the mistaken belief of the radial motion of galaxies by putting galaxies on the surface of a balloon. If the galaxies are on the surface of a balloon, they will collapse due to gravitational interaction. For the galaxies to remain as independent entities, galaxies themselves must be orbiting systems. Galaxies cannot be stationary entities on an expanding surface of a balloon or in any other stationary arrangement in space since such an arrangement undergoes a gravitational collapse.

An expanding space cannot change the mutual distances between galaxies. An expanding space cannot change the mutual distances between the objects in a gravitationally bound orbiting system. On the other hand, it is also a fair question to ask, why should the galaxies move radially away from earth? There is no possible reason. There is no reason for the stars or galaxies to move relative to observers on the earth or Mars.

What have galaxies got to do with an observer on earth? Nothing. Can the redshift of a single star in a galaxy reveal the behavior of the galaxy of billions of stars? No. Each star in the same galaxy has its own redshift. Different stars in the same galaxy have different redshifts. It is also possible for some of the stars in the same galaxy to have different blueshifts while the rest of the stars have different redshifts.

The Doppler effect cannot explain the redshift of light from a star in a galaxy since light from stars propagates in an inhomogeneous medium. The use of galactic redshift to claim that the universe is expanding is invalid; it is an obvious experimental

observation misinterpretation. Space cannot expand, only a material medium in space expands.

Hubble combined the Slipher's brightness data and the redshift data together with his own data, and obtained a linear relationship  $v=Hd$  between the radial speed of galaxies and the distance to the galaxies even though such a relationship of speeds and distances relative to an observer on earth is meaningless, where  $v$  is the radial speed,  $d$  is the distance to a galaxy from earth, and the  $H$  is portrayed as a constant. You cannot measure a redshift of a single star in a galaxy with billions of stars and claim that the star redshift is due to the radial motion of the galaxy, and attribute the star redshift to the galaxy, and call it a galactic redshift. It is not the galaxy that has a redshift, it is individual stars in the galaxy that have individual redshifts.

The redshift from a star in a galaxy with billions of stars cannot be attributed to the galaxy and claimed that the redshift of a star resulted from a certain behavior of the galaxy itself. To make the claim that the redshift of light from a star in a galaxy is a result of the redshift of the galaxy, light from all the stars in the galaxy must have the same redshifts. Billions of different stars within the same galaxy do not have the same redshift. Billions of different stars from the same galaxy do not have the same increasing redshift to claim that the universe is expanding at an accelerating rate.

To falsify the claim that the galaxies are moving away, all one has to do is show that the redshifts from two different stars in the same galaxy are not the same. To falsify the claim that the galaxies are moving away at an accelerated rate, all one has to do is to show that the increasing redshifts from two different stars in the same galaxy are not the same. Different stars in the same galaxy cannot have the same redshift. Different stars in the same galaxy cannot have the same increasing redshift.

Redshift from a star cannot be attributed to a Doppler shift and a radial motion of galaxies since the medium the light is propagating is not homogeneous. The redshift of light from stars is a result of the changes of the speed of light due to the variation of the density of the medium light encountered on its path from a star to earth. Different stars in the same galaxy have different medium densities surrounding them. Some of the stars can lose the material from its surrounding medium to other mediums surrounding the stars. The loss of medium density from one star will be a gain for the medium densities for the other stars. Some stars may emit more materials to its surrounding medium than the other stars. The density of the medium surrounding a star varies over time. The mediums surrounding stars are star dependent and non-homogeneous. The redshift of a star in a galaxy is not a result of a radial motion of the galaxy since all the stars in the galaxy do not have the same redshift.

The misinterpretation of the redshift of light from a star in a galaxy as a result of the radial motion of the galaxy itself gave the much sought after canvas for General Relativity to play on. Einstein's General Relativity indicates that the universe can expand, contract, or remain stationary. Around the same time, Hubble misinterpreted the star redshift as the Doppler effect and made the false claim that galaxies are moving away radially with speeds proportional to the distances to the galaxies from earth, which led to the meaningless and incomprehensible claim that the universe is expanding. Hubble's relationship also indicated that the further away the galaxies are from the earth faster they are moving away. This also does not make any sense. Why should the galaxies move away faster when they are further away from the earth? No reason. They tried to demonstrate it by laying the galaxies on the surface of a balloon and blowing the balloon. As we have seen, this interpretation fails since galaxies will collapse on themselves in such an arrangement due to gravitational interaction; they were blind to this fact.

Hubble misinterpreted the redshift of light from a star as a doppler effect, and falsely claimed that the galaxy was moving away from us. They not only misinterpreted the redshift to claim that the redshift of a star in a galaxy is a result of the radial motion of the galaxy itself, but also falsely attributed the falsely proclaimed radial motions of galaxies to a universe expansion. Further away an object is from us faster it is moving away from us; they claimed. But there is one glitch for these claims. All the objects and the compound objects in the universe are gravitationally bound, galaxies are no exception. Expanding space cannot change the interplanetary or intergalactic distances of orbiting systems.

Yet, they tried to justify the claim of the expanding universe by putting galaxies on the surface of a balloon and demonstrating how galaxies are moving away relative to each other as the balloon was blown up. The problem with this interpretation is that the galaxies are compound gravitational objects. Galaxies cannot be put on the surface of a balloon. This demonstration is not just wrong, it is meaningless just as the demonstration of the warping of space using a ball on a trampoline. You cannot even place a ball on a trampoline. A ball cannot create a dent on a trampoline. Galaxies cannot be on an expanding surface. They will collapse due to gravity. In order for the galaxies to be independent, galaxies themselves must also be orbiting systems.

Just like planetary orbiting systems, galaxies must also be orbiting galactic clusters in order for galaxies to maintain their independence and avoid gravitational collapse. Expanding universe or expanding space cannot change the intergalactic distances of the gravitationally bound galaxies. Expanding universe cannot give galaxies a radial speed because galaxies are not anchored to space; galaxies are gravitationally anchored to galactic orbiting systems. Orbiting objects are gravitationally anchored to orbiting systems. Even

if we falsely assume that the universe is expanding, space is expanding, that cannot give galaxies a radial speed. Expanding space or expansion of the universe cannot generate a radial motion of galaxies.

*“Expanding universe or expanding space cannot change the intergalactic distances of the gravitationally bound galaxies.”*

As we have already seen, the galactic redshift is not a result of a doppler effect. We can attribute the red shift to a Doppler effect for light sources at short distances where the medium is nearly homogeneous and the density gradient of the medium can be safely disregarded. For large gravitational objects such as galaxies at large distances, the medium is inhomogeneous. The density gradient of the medium generates the change of speed of light, and hence the shift of wavelength since the frequency is unaltered. Unlike in the Doppler effect, the redshift/blueshift due to the density gradient of the medium is real. If the star redshift/blueshift is a result of the Doppler effect, there must also be a gradual change of apparent brightness of a star. The lack of such a gradual change of the apparent brightness of stars rule out the Doppler effect for the star redshift/blueshift. The star redshift/blueshift is real, it is not just an observer effect as in the case of the Doppler effect.

The Doppler effect is for the observer's eyes only; it is not real. Once light bursts are released from a source, propagation of light is determined by the medium, not by the source, not by the observers, not by gravity. The light bursts are not anchored to the source. The motion of the source has no effect on the actual frequency, wavelength, and the speed of propagation of light. It is only that the motion of the source changes how many bursts an observer receives per second. Observer motion has no effect on the propagation of light. The observer motion only affects the number of bursts the observer receives per second. The actual frequency, wavelength, direction of light, and the speed of the wave are unchanged by the motion of the source and the observer. Star redshift/blueshift is real and cannot be attributed to the Doppler effect. Star redshift/blueshift is the wavelength shift, not the frequency shift. Frequency is unaltered.

It is especially so since there is no valid reason for galaxies to move away from earth. The redshift is a result of light propagating in changing media and density gradients of medium with an overall net negative density gradient of the medium from a star in a distant galaxy towards the receiver on earth, which are many light years apart. The Doppler effect plays no role in such inhomogeneous media at such large distances, where frequency is unaltered. Doppler effect applies for short distances in a homogeneous medium or in a vacuum, where both frequency and wavelength are altered as an observer phenomenon.

The Doppler effect also requires the gradual change of the apparent brightness of the star redshift/blueshift. If the star redshift is a result of the

Doppler effect, the apparent brightness of the star must gradually decrease with time. Similarly, if the star blueshift is a result of the Doppler effect, the apparent brightness must gradually increase with time. The star redshift/blueshift is the wavelength shift while the frequency is unaltered, and hence it is not only wrong but also makes no sense to attribute the star redshift or blueshift to the Doppler effect. Star redshift cannot be attributed to the galactic redshift since all the stars in the same galaxy do not have the same redshift. As a result, galaxies have no redshifts/blueshifts and hence galaxies have no Doppler effect.

The fact is that we observe a redshift of a star in a galaxy if the light from a distant star in a galaxy travels in a medium that has an overall net negative density gradient of the medium on its way to earth. We also observe a blueshift of light from a star in the same galaxy or in a different galaxy if light from a distant star in the galaxy travels in a medium that has an overall net positive density gradient of the medium on its way to earth. It is also true that some stars can have redshift while others have a blueshift even though the stars are from the same galaxy. Stars from the same galaxy can have different redshifts and different blueshifts.

Since the stars are massive compared to the earth, the density gradient of the medium around a star far exceeds the density gradient of the medium surrounding the earth. And as a result, the blueshift is quite uncommon, but possible. Redshift from a star in a galaxy cannot be attributed to a radial motion of the galaxy that has billions of independent stars with different medium densities surrounding them. These medium densities are dynamic; medium densities change over time. Some stars may have increasing medium densities while others have decreasing medium densities.

The blueshift can only be present if light passes through an in-between space with a large enough positive density gradient so that the overall net density gradient from star to earth is positive. If the net density gradient as a result of an unusually large in-between positive medium density gradient and the positive density gradient of the medium surrounding the earth is larger than the negative density gradient of the medium that the light has to pass through near the star, then, the wavelength shift will be a blueshift.

*“The reason for a galactic redshift/blueshift is the density gradient surrounding the star (the source), the density gradient surrounding the earth (the receiver), and the density gradient in-between (intermediary) that light has to pass through on its way from the star to the detectors on earth.”*

*“If the overall density gradient of the medium from star to earth is negative, the wavelength is redshifted, while frequency is unaltered.”*

*“If the overall density gradient of the medium from star to earth is positive, the wavelength is blueshifted, while frequency is unaltered.”*

*“The absence of a gradual change of the apparent brightness of stars, redshift/blueshift of wavelength, and unaltered frequency are indications that the star redshift/blueshift is not the Doppler effect.”*

### **a) Expanding Universe Cannot Change the Distance to a Galaxy and Wavelength**

For waves to propagate, they must be free of any anchorage. Propagating waves are anchored neither to a source nor to space. Even if we make the false claim that the universe is expanding, the expanding space cannot alter the wavelength or any entity of the wave since propagating waves are not anchored to space. An anchored wave cannot propagate. Space is not an anchor.

Light does not have to zip up space and time by the speed of light  $c$  in order to propagate in space. There are no hems in space and in time for zipping up. Time is not an axis. Time does not satisfy the properties required to be an axis. Time is a definition. We define the time in earth year, one complete orbit of earth. We only have access to one point in time, not to an axis, Space and time are independent. Space is not a function of time and time is not a function of space. Space anchors neither objects of mass nor waves. Wavelength is unalterable by the expanding universe. Expanding universe cannot generate a redshift or blueshift. Expanding universe cannot generate redshift and blueshift.

Space cannot expand. It is the matter that expands or contracts. It is a medium that expands or contracts resulting in a density gradient in the presence of a gravitational object of mass. It is this density gradient of the medium that generates a redshift or a blueshift. If light is propagating out of a star in a galaxy, light is propagating in a decreasing density or negative density gradient and hence leads to a redshift. If the light is propagating towards a star in a galaxy, light is propagating along an increasing medium density, or in a positive density gradient, and hence it results in a blueshift.

Expanding Universe can explain neither the redshift nor the blueshift. Even if we make the false claim that the expanding universe moves the galaxies away from us resulting in a star redshift, an expanding universe cannot generate a star blueshift. If star redshift in a galaxy is a result of a universe expansion there cannot be a star blueshift in a galaxy. The presence of star blueshift in a galaxy is a contradiction to the claim that the star redshift in a galaxy is a result of universe expansion. You cannot use one mechanism to explain redshift and another completely different mechanism to explain the blueshift. Both star redshift and star blueshift must have the same cause. Star redshift should not be unique to a certain group of galaxies. Star blueshift should not be unique to another group of galaxies. Star redshift/blueshift is not

unique to a galaxy. A single galaxy can have stars with different redshifts and also stars with different blueshifts, which makes the universe expansion theory shortsighted and false.

Expanding universe or expanding space cannot change the wavelength of light since propagating waves are not anchored to space. Space, which is nothing, can anchor nothing. Since the different stars from the same galaxy can have different redshifts, a redshift from a star in a galaxy cannot be used to make a general claim about the galaxy that consists of billions of stars. The stars from the same galaxy can have not just different redshifts, some of the stars may even have blueshifts. In addition, the redshift/blueshift of the stars from the same galaxy can also vary over time due to the change of the medium surrounding the stars over time.

### **b) Why Galactic Redshift is Proportional to the Distance**

When a galaxy is far away, the change of the density gradient of the medium lasts a long distance. If the change of density persists for a long distance, the change of the redshift will be greater. The redshift is proportional to the distance to the star in a galaxy. If the redshift is  $\Delta\lambda$ , the change of wavelength, it is proportional to the distance  $d$ ,

$$\Delta\lambda = Hd$$

where,  $H$  is the Hubble parameter. The redshift  $\Delta\lambda$  does not represent a Doppler effect. The redshift  $\Delta\lambda$  does not represent a radial speed. It is not the radial speed  $v$ , which is non-existent, that is equal to  $Hd$ , it is  $\Delta\lambda$  that is equal to  $Hd$ . There is no radial motion of galaxies and  $v \neq Hd$ . The  $1/H$  is not the age of the universe. In fact,  $H$  is unitless.

The Hubble relationship has nothing to do with the radial speed of galaxies. Galaxies have no radial motion with respect to earth, the observer, or the redshift detector. There is no reason for galaxies to have a radial speed relative to earth or any other observer on another planet in a different solar system. Radial motion of galaxies relative to the earth is a result of a misinterpretation of the galactic redshift as a Doppler effect.

The Doppler effect requires a homogeneous medium, which indeed does not hold for larger distances especially for objects that are many light years away. The Doppler effect is only for the observer's eyes only. There is no actual shift of wavelength in the propagating waves in the Doppler effect. The star redshift is real; it takes place in the propagating wave. Star redshift is there whether we observe or not. The Doppler effect is not there if an observer is not present. An observer is instrumental in bringing the Doppler effect. Star redshift is real. A change in medium shifts the speed of light and hence the shift of actual wavelength. It is the refraction of light by the density gradient of the medium

surrounding a star that generates a wavelength shift. Frequency of a wave is unaltered.

### c) Universe is Not Accelerating

If the medium density surrounding a star increases with time, the galactic redshift will be increasing with time. If the medium density surrounding a star decreases with time, the galactic redshift will decrease with time. Since it has been observed that the galactic redshift is increasing with time, it is an indication that the densities of the media surrounding those stars with increasing redshifts are increasing with time. Stars are ejecting more matter over time into the medium they surround, and also attracting more and more gas and dust from the external environment causing the medium densities surrounding stars to increase over time.

The increasing galactic redshift cannot be used to make the false claim that the universe is not only expanding, it is also accelerating. Neither the redshift nor the increasing redshift of light from stars can be attributed to the motion of galaxies.

The Doppler effect is not real. There is no actual frequency and wavelength shift taking place in the propagating wave in the Doppler effect. Observer cannot shift the frequency of a propagating wave. The motion of a source cannot shift the frequency and wavelength of a wave burst that the source emits. If we turn on a flashlight, that light does not carry the signature of the speed of earth. When we turn on light, the wavelength of light is not shifted because of the motion of the earth. It is only the number of wave bursts an observer receives per unit time that varies with the motion of the source or observer. No actual shift of the frequency or the wavelength of the wave propagating in space.

Doppler shift does not take place in the actual propagating wave in space. The Doppler effect is for the observers and the detectors only. The Doppler effect cannot apply to light from stars where the wave propagation is taking place in an inhomogeneous medium that refracts light, that alters the speed of light and the direction of the light. Star redshift or the increasing star redshift cannot be attributed to the Doppler effect associated with radial motion and to an accelerated universe expansion. The Doppler effect is a clear indication that what we observe may not be what is actually there.

In the relationship  $\Delta\lambda = Hd$ , the distance  $d$  to a star in a galaxy is unchanged with time unless the mass of the star is changing significantly. The redshift  $\Delta\lambda$  changes with time due to the change in the medium density and the density gradient, and hence, the  $H$  cannot be a constant. If the star redshift is increasing with time due to the increase of the density of the medium that surrounds a star, it must also be the case that the star blueshift is decreasing with time wherever it is observed. There can be stars with decreasing redshifts and stars with decreasing blueshifts since

the redshift or blueshift variations are determined by the change of the medium over time.

There is no reason for all the stars in the same galaxy to have the same redshifts/blueshifts. It is not possible to attribute the redshift from a star in a galaxy as a property of the galaxy. Different stars in the same galaxy can have different redshifts/blueshifts. In the same galaxy, some stars may have different redshifts while some other stars have different blueshifts. All the stars in a galaxy of billions of stars are not going to have the same redshift since the density of the media surrounding the stars are not the same and the paths light has to take to arrive at an observer on earth are different. The redshift/blueshift of a star is the signature of the star itself, not a property of the whole galaxy that the star is in. If we find that the light from a star in a galaxy has a redshift/blueshift, we cannot attribute that redshift/blueshift to the whole galaxy containing billions of stars and claim that the galaxy itself has a redshift/blueshift.

The increase in star redshift cannot be used to claim that the universe is accelerating. Different stars from the same galaxy can have different increasing redshifts. The increasing redshift from a star in a galaxy cannot be attributed to the galaxy as a characteristic of the galaxy. The same galaxy can contain other stars with different increasing redshifts as well as stars with different increasing blueshifts. While some stars in a galaxy can have different increasing redshifts/blueshifts, the other stars in the same galaxy can also have different decreasing redshifts/blueshifts. The increasing redshift of a star cannot be used to claim that the Universe is expanding at an accelerating rate since the increase in redshift is a result of the increasing medium that surrounds the stars.

Universe is neither expanding nor accelerating. Redshift of a star in a galaxy cannot be attributed to radial motion of the galaxy. Galaxies do not have a radial motion relative to observers. Increasing redshift cannot be attributed to accelerated radial motion. There is no radial motion of stars or galaxies relative to observers.

*“The redshift/blueshift of a star in a galaxy is not a property of the galaxy itself.”*

*“The increasing/decreasing redshifts of stars over time is a result of the increasing/decreasing density of the medium surrounding the stars over time.”*

*“The increasing/decreasing blueshifts of stars over time is a result of the increasing/decreasing density of the medium surrounding the stars over time.”*

Lemma:

*Redshift/blueshift of light from stars is independent of observers since the redshift/blueshift is determined by the medium.*

*“The redshift of a star cannot be attributed to a radial motion of the galaxy. Expanding universe*

*cannot generate a radial motion on gravitationally bound stars and galaxies. The redshift is not a result of expansion of the universe. An increasing galactic redshift cannot be attributed to an accelerated expansion of the universe."*

*"Universe is neither expanding nor accelerating."*

#### **d) There are no Virtual Particles**

The claim that virtual particles pop up in space is mythical, a fairytale. There are no virtual particles. If there were virtual particles popping up randomly in conjugate pairs in vacuum, we would not have had an energy crisis. We could have charged batteries using just a vacuum; energy from nothing. We should have separated the virtual particles using nothing but just two electrodes since virtual particles are of opposite polarities. The mysterious fairytale concept of virtual particles stem from an experimental misinterpretation, notably the Carl Anderson's cloud chamber experiment. Electron and positron pairs are not popping up randomly in vacuum. There is no vacuum energy. There is no independent entity called energy. Energy is kinetic energy of masses and hence there is no massless energy. Potential energy is not energy until it is converted into kinetic energy of particles of mass or particles of charged mass.

*"The lack of continuous gradual change of the apparent brightness of stars, redshifts/blueshifts of wavelength, and unaltered frequency rule out the Doppler effect for star redshift/blueshift."*

*"The presence of stars with different redshifts in the same galaxy can rule out a galactic redshift."*

*"The presence of star redshift and star blueshift rules out the expansion of the universe."*

### **VII. MASS CANNOT WARP SPACE; GENERAL RELATIVITY CANNOT DESCRIBE GRAVITY**

A single mass has no gravity. Gravity is the interaction between masses. There is no gravity without the interaction of at least two masses. Gravity exists between masses. There is no gravitational potential energy without the interaction of two masses. The gravity is a result of mass to mass interaction. The gravitational potential is a result of a mass to unit mass interaction, the work done to bring a unit mass to a position from a large distance. The loss of potential is the kinetic energy gained. As a result, although the work done by an external agent is negative, work done by the gravitational object is positive. The potential energy of a mass at any point is positive. It is the potential energy loss that is negative, not the potential energy itself. As far as a mass is concerned unit mass is just another mass that it interacts with. A mass cannot warp space. A mass cannot affect massless.

If an object of mass can warp space as General Relativity suggests, the amount of warp of space cannot be determined by the mass of an object. The warp will be determined by the volume of an object,

not by the mass of the object. It is the volume that occupies the space, not the mass. If the warp is determined by the volume of an object, then, the gravity in General Relativity will be determined by the volume of an object, not by the mass of an object. The claim in General Relativity that a mass warps space is self-contradictory.

If mass warps space, there will be a resistance to the motion of a mass in space and such a resistance will bring the orbiting systems to collapse. If the motion of mass alters the warp of space, the change of the warp of space in return must resist the motion of the mass, the equal and opposite reaction. If the space is warpable, the change of a warp due to the motion of the object requires energy, cannot be free, and the energy required has to come from the motion of the object, resulting in a resistance to the motion of the object.

*"A mass warps the material medium surrounding the mass. The volume of a mass occupies space."*

Lemma:

*If a mass warps space, the motion of a mass will generate the change in warp, and the change of warp will in return resist the motion of the mass leading to the collapse of orbiting systems.*

If the space is warpable by an object, the warp of the space by an object of mass  $m$  with a smaller volume  $v$  is not the same as the object of the same mass  $m$  with larger volume  $V$ . Even if the space is warpable, a mass cannot warp space since a mass cannot exert a force on massless entities. It is the volume of an object that occupies the space, not the mass of an object. As a result, if the space is warpable, it is the volume of an object that warps the space. It is the volume of an object that generates a hole in space. The size of the hole is determined by the volume of an object, not the mass of an object. If the space is warpable, the curvature of the warp is determined by the volume of the object, not the mass of the object. The mass of an object warps the medium surrounding the object generating density gradient of the medium, which refracts light resulting in a redshift or blueshift of wavelength.

However, contrary to the claim in General Relativity, space is not warpable. Only a material medium is warpable. Gravity cannot be a result of the mysterious warping of space. If the gravity is a result of the warping of space, the motion of mass generates the change of the warp, which in turn resists the motion of the mass, and as a result an orbiting system will collapse. The volume of an object occupies the space; it does not warp the space. It is only a very large mass of an object that affects the volume of the object itself. A mass has no effect on space.

Space does not move. You cannot FedEx space. Space does not bend, only the matter bends. Einstein's 1952 notion of the motion of the space within the space is not real; it is hypothetical and

meaningless. An empty moving box does not move the space, it moves in space. If the thickness of a moving box is brought to zero, there is nothing moving.

#### VIII. A SPECIAL CLASS OF CLOCKS WITH A UNIQUE DESIGN RUN SLOW UNDER GRAVITY IN THE PRESENCE OF A MEDIUM

How a clock functions in a given environment depends on the design of the clock. All the clocks are affected by gravity as a chunk of mass and hence the gravitational force on the mass of the clock affects the mechanism of the clock resulting in a change of the reading on the clock in the presence of a gravitational object. A clock may give different readings on earth and the moon since the gravitational force on the clock in two situations are quite different. This gravitational effect is on the mass of the clock, and hence it affects the mechanism of the clock; it is not an effect of the gravity on time itself.

However, there is a special category of clocks that runs slow in the presence of a medium surrounding a gravitational object since the medium is affected by gravity. A gravitational object generates a density gradient of the medium that it surrounds. This density gradient of the medium affects the function of a special class of clocks and hence time displayed on the clocks due to their very specific design. These are the clocks of a very special design, where the mechanism of the clocks is based on the travel time of a beam of light. These clocks are affected by the change of the speed of light. If the mechanism of the clocks is based on the propagation of light, then, they are affected by the change of speed of light. Any clock that has a mechanism based on the propagation of light is going to be affected by the density gradient of a medium.

Let us consider the class- $\Omega$  of clocks that are engineered based on the traveltime of a beam of light. In class- $\Omega$  clocks, the display time depends on the speed of light where the clock is at since the display on the clock is given by the travel time of a beam of light. If a class- $\Omega$  clock is in a medium where the speed of light is slower, then the class- $\Omega$  clock runs slower. If a class- $\Omega$  clock is in a medium where the speed of light is faster, then the class- $\Omega$  clock runs faster.

When light travels towards a gravitation object in the presence of a medium, light is traveling in the direction of increasing density and as a result the speed of light decreases. If a class- $\Omega$  clock moves towards a gravitational object in the presence of a medium, it is moving towards an increasing density and hence towards a decreasing speed of light. As a result, a class- $\Omega$  clock moving towards a gravitational object in the presence of a medium runs slower.

Similarly, if a class- $\Omega$  clock moves away from a gravitational object in the presence of a medium, the clock is moving in the direction of the decreasing density and hence towards an increasing speed of

light. As a result, a class- $\Omega$  clock moving away from a gravitational object in the presence of a medium runs faster.

In the absence of a medium or in a vacuum, the speed of light is unaltered with the motion of the clock near a gravitational object. As a result, a class- $\Omega$  clock has no change of its time as the clock moves towards or away from a gravitational object in a vacuum since the speed of light in a vacuum remains constant irrespective of the presence of a gravitational object. A class- $\Omega$  clock is unaffected by a gravitational object in the vacuum.

All the clocks are objects of mass. All the masses are affected by a gravitational object of mass; a clock as a chunk of mass is affected by a gravitational object in the same way, no different. When a clock is near a gravitational object, it exerts an attractive force on the mass of the clock just as it would on any other mass, which in turn affects the mechanism of the clock and its display; this is not an effect of gravity on time itself. Gravity has no effect on the massless. Gravity has no effect on time itself. How sensitive a clock is to the gravitational force on the mass of the clock depends on the mechanism of the clock as well as the mass of the clock.

Gravity has no direct effect on propagation of light. Gravity can have an indirect effect on the propagation of light in the presence of a medium since a gravitational object generates a density gradient, which affects the speed of propagation of light. The class- $\Omega$  clocks are affected by change of the speed of light due to the density gradient of the medium, which is in fact a secondary effect of gravity in the presence of a medium on clocks, whose working mechanism is based on the travel time of a beam of light.

The mass of a class- $\Omega$  clock also has the direct effect of the gravitational force in the presence of a gravitational object. However, class- $\Omega$  clocks have an additional influence that makes them run fast or slower due to their specific design that is based on the traveltime of beams of light. The class- $\Omega$  clocks run slower near a gravitational object since every gravitational object surrounds a medium, where the density of the medium depends on the position, and the density of the medium is higher near a gravitational object and hence the speed of light is slower.

It is only the design of the clocks based on the traveltime of a light beam that depends on the gravity in the presence of a medium since the travel time of a light beam depends on the speed of light, which in turn depends on the density of the medium where the clock is at. No other design of clocks runs slower or faster near a gravitational object in the presence of a medium. Every clock with equal mass at the same location is subjected to an equal gravitational force. However, some mechanisms of the clocks are more sensitive to this gravitational force on the mass of the clock than the others. As a result, the display of a

clock depends on the environment the clock is in and the effect varies from one design of a clock to another.

The display of a clock does not determine the time, a year, one complete orbit of the earth. Any measuring instrument including clocks is designed to perform as expected when the clock is in the environment given in the design specifications. If a clock is outside that design environment, the reading of the clock may not give the correct result. The discrepancies of a display of a clock in different speeds cannot be used to claim that the time depends on speed. The discrepancies of a clock at different gravities cannot be used to claim that the time depends on the gravity. Time itself is independent of speed and gravity. A clock is an instrument engineered for breaking down the time, a year, into smaller intervals. A measuring instrument does not determine what is being measured. An engineered instrument for breaking down the time, a year, into smaller subintervals does not determine the time, a year. A clock cannot determine the time, a year.

*"If the design of a clock is based on the travel time of a beam of light, then the clock runs slow under gravity in the presence of a medium since gravity generates a density gradient, which slows the speed of light as the density of medium increases near the gravitational object. Gravity has no effect on time itself. Gravity has no effect on light, the massless, in the absence of a medium."*

*"The reading on a clock does not define time. A clock is a device to break down the time, a year, into smaller intervals, hours, minutes, and seconds. A clock does not determine the time, a year. The time, a year, itself is independent of clocks."*

Special Relativity and General Relativity do not work with the time given by ordinary clocks. In Special Relativity and General Relativity, relative time is defined as the average return time of a beam of light; no clock gives the average return time of a beam of light. In Special Relativity and General Relativity, time depends on gravity in the presence of a medium since time is defined as the average return time of a beam of light. Even in Special Relativity and General Relativity, time is not affected by gravity in a vacuum.

Special Relativity and General Relativity are incompatible with ordinary clocks that give one way time. None of the clocks gives the average return time of a beam of light and hence they are useless in Special Relativity and General Relativity. Average return time of a beam of light cannot be obtained in real time and hence Special Relativity and General Relativity do not work in real time; average return time of a beam of light is only available for the past. If time is relative or depends on the motion of an observer, time will be directional. In Special Relativity and General Relativity, time is directional. Time cannot be directional.

## IX. TIME CANNOT BE A DIMENSION

We can represent the 3-dimensional space with three orthogonal axes  $x$ ,  $y$ ,  $z$ . Any point on axes  $x$ ,  $y$ ,  $z$  are accessible. If we have a vector of infinite span where all the points are not accessible, that vector cannot represent an axis.

We cannot draw an arrow on a paper and label it as time and call it an axis since it does not meet the requirements for an axis. In the case of time, we have access to neither the past time nor the future time. All we have is the present time. Time is a point not an axis. Time cannot represent an axis. Unlike 3D axes in space, a time axis drawn on paper cannot be transferred to reality. There is no 4D space time. What is there is the 3D space at this moment in time. We use the changes in the objects in 3D space to define the next moment in time. If there is no change of objects in 3D space, then, there is no time. If there is no heartbeat, we have no sense of time if we are stuck in an empty basement.

In Special Relativity, the time is not the real time since the relative time in Special Relativity is defined as the average return of a light beam. As a result, Special Relativity does not work in Real one way time. Special Relativity is an off-line approach where we can calculate the average return time using past data. Special Relativity cannot be an approach used in nature since nature does not run on the average return time of a light beam. Nature does not have a means for calculating average return time of a light beam.

Since there cannot exist a 4D spacetime, there cannot be a warping of spacetime. Time cannot be warped since time is not a dimension. Time intervals only exist in the past. Present time has no access to the past time. Warping of spacetime can only be done on paper, not in real time. Space cannot be warped. Space cannot be distorted. If the space is warpable, by a gravitational object, then it is not the space. It is only on another mass that a mass or gravitational object can exert an effect, a force. Gravity is an interaction between masses. A mass cannot exert a force on the massless, the space. A mass itself has no gravity. A mass cannot distort space. If space is warpable and mass warps space, the motion of a mass leads to the change of the space-warp and as a result the change of the space warp resists the motion of the mass resulting in ultimate collapse of orbit systems. Space is not warpable. A mass cannot warp the space. If space is warpable, it is not an empty space, it must be a material medium.

General Relativity claims that a mass warps spacetime. If it is only the mass of an object that can warp spacetime, then there is a problem. The wrapping of space by a gravitational object of mass  $m$  and volume  $v$  cannot be the same as the warping of space by a gravitational object of the same mass  $m$  with a bigger volume  $V$  since the object of bigger volume has to create a bigger hole compared to the object of smaller volume of the same mass. The mass of a gravitational object cannot be the determining

factor of spacetime warping. If the space is warpable, the warping of the spacetime and the curvature of the spacetime must depend on the volume of the object, not on the mass of the object.

A mass itself has no gravity. Gravity exists between two masses. Space is massless. A mass itself cannot exert a force. A mass cannot create a dent on a trampoline. It is not even possible to put a mass on a trampoline. A mass cannot distort space. It is only a medium that can be distorted by a mass. Space exists. We can travel in space. However, we cannot travel in time because time does not exist until we define it. Once time is defined, it is the time that travels, not us. The flow of time is a definition based on an engineered metronome. The time, a year, is independent of the clocks and the earth's gravity. Clocks are engineered devices to break down the time, a year, into smaller intervals and hence clocks cannot determine the time. Clocks cannot determine the age.

*"The time, a year, one complete orbit of the earth, does not vary with the speed of a clock."*

#### X. TIME IS NOT RELATIVE

Lemma:

*The time, a day, one complete revolution of the earth, does not depend on clocks. Speed of clocks that we engineer do not determine a day. The time, a year, one complete orbit of the earth, does not depend on clocks. Speed of clocks that we engineer do not determine a year.*

The time defined by the year is a constant if the mass of the sun is a constant. Since the mass of the sun is not a constant and it decreases due to the loss of mass, the year is not a constant. The loss of the mass of the sun is not due to the conversion of mass into energy. The mass cannot be converted to energy,  $E \neq mc^2$  since there is no independent entity called energy. Energy is the kinetic energy and hence the energy has no existence without the association of masses. Kinetic energy of a mass has nothing to do with the speed of light  $c$  unless the mass is moving at the speed of light  $c$ . There is nothing preventing a motion of a mass at the speed of light  $c$ . Even if a mass is moving at the speed of light  $c$ , the energy of the mass moving at the speed of light cannot be given by  $E=mc^2$  since no mass can start at constant speed  $c$ . If a mass  $m$  is moving at speed  $c$ , its kinetic energy would be  $E=(1/2)mc^2$ .

In Special Relativity, it is falsely assumed light is relative and a beam of light is chosen as the absolute frame. If a beam of light is chosen as absolute frame, and if light is relative, then relative to light a stationary object of mass  $m$  has an imaginary speed  $c$ , and as a result, a mass  $m$  has imaginary energy  $E=mc^2$ . Einstein's  $E=mc^2$  in Special Relativity is imaginary, not real; it does not exist.

The kinetic energy of a mass  $E=mc^2$  originated from the false assumption that light is relative. No one

has ever proven that the light is relative, and it cannot be proven; light is not relative [6]. Einstein did not prove light is relative. He used it as an assumption in Special Relativity and General Relativity. Lorentz tried to prove light is relative by claiming that the time is relative, but failed [1,6]. Following Lorentz's initiative, Einstein managed to transform light onto an inertial frame by giving a new definition for the relative time as the average return time of a beam of light, but in the process, he derailed light relative to observers. And, the problem is that the average return time of a beam of light is not given by clocks. So, Special Relativity and General Relativity are not applicable with oneway time given by clocks. In addition, Einstein derivation also generated Shear electromagnetic (SEM) waves, where the speed is dependent on the frame of reference. In short, Einstein could not prove that light is relative. So far, no one has. Einstein used it as an assumption and continued, the rest followed with no regards to proving it.

If the light is relative, relative to light, a rest mass of mass  $m$  has the constant speed  $c$  and hence relative energy or rest energy  $E=mc^2$ ; this is the genesis of  $E=mc^2$  in essence, despite Einstein's roundabout approach for deriving it. If you can stop light, any rest mass of mass  $m$  has speed  $c$  against the direction of light, and a rest kinetic energy of  $E=mc^2$ . Problem is that light has no standstill existence and hence, light is not relative. Propagating waves gave no standstill existence. No mass can be relative to an entity that has no standstill existence. For a mass to have a relative motion with respect to a second entity, the second entity must be able to be brought to a stop. Light cannot be brought to a stop since light has no existence without propagating. A stationary mass cannot have a speed relative to the propagation of light. Not just stationary mass, any mass, irrespective of whether it is moving or stationary, has no relative speed relative to light.

Light is not relative. A rest mass has no kinetic energy, and cannot have a speed  $c$  relative to light, and hence  $E \neq mc^2$ . A stationary mass has no rest energy given by  $E=mc^2$ . Einstein's claim that mass and energy are equivalent is incorrect since energy has no independent existence without mass,  $E \neq mc^2$ . There is no massless energy. There is no independent entity called energy. Energy has no existence without the association of masses. The loss of the mass of the sun is a result of the loss of particles by the solar wind. The generation of electromagnetic waves by the sun does not result in a mass loss. Mass cannot be converted to energy since energy has no existence without mass. Electromagnetic energy is potential energy. Potential energy is not energy until it is converted to energy by electrons, charged masses.

Lemma:

*Mass and energy cannot be equivalent since energy has no independent existence.*

The loss of mass of the sun means a mass gain for other masses. Mass in a closed system must be conserved. Any particle that exceeds the escape velocity leaves the gravitational object. Both mass and energy are conserved in a closed system. Although the time, a year, is dependent on the mass of the sun, the time, a year, is independent of the earth's gravity, where the clock and the observers are.

The time, a year, is observer independent. The time, a year, is simply one complete orbit of the earth. We define one orbit of the earth around the sun as an earth year. It does not matter what inertial frame you are on, one orbit of the earth, a year, is the same, remains unaltered. The time, a year, is observer independent. The orbit of earth is observer independent. The motion of an object on its fixed path is independent of observers. It is the orbit of the earth as a single entity that shifts against the motion of an observer, not the orbiting object [4]. Observers cannot deorbit earth. Observers cannot derail light.

As a result, it does not matter which inertial frame you are observing from, the time, a year is a year. The time, a year, is independent of the frame of an observer. You cannot change the orbit of the earth by flying away from it. Observers cannot derail trains. A year is a year for every observer independent of whether the observer is moving at constant speed or at an accelerated speed. Neither an observer at constant speed nor at an accelerated speed can derail trains, deorbit the planets, change one orbit of the earth, a year. Observers cannot alter the planetary orbits.

*"It is the orbit as a whole that shifts relative to observers, not what is orbiting on the fixed orbit."*

Clocks do not define time. Clocks do not define how old we are. Clocks do not define how old the universe is. Clocks do not define how long it takes the earth to make one complete orbit. A clock is a device we engineered for a purpose. A clock is a device that is engineered for breaking down the time we have defined as a year into smaller intervals.

We engineer measuring instruments or clocks to break down the year into small manageable intervals, hour, minutes, and seconds. Engineers have improved the precision of clocks with new mechanisms, such as atomic clocks, by breaking down the time, a year, into finer intervals with less variability. The design of advanced clocks does not change the time, a year. The year is still the year.

The clocks we engineer may depend on many factors just as any measuring instrument depends on the environmental factors the instruments are in. However, the variations of clocks with the physical environment the clocks are in does not change the fact that the year is independent of the clocks. It does not matter what clocks indicate, the reading on the clocks does not change the fact that the year is a year. A clock may run faster or slower. However, the speed of a clock does not change the time, a year.

The time, a year, is independent of the speed of an observer. We cannot change the orbit of the earth by flying away. We cannot change the amount of time, a year, that takes the earth to make one orbit by flying away. We cannot derail a train by running. It does not matter how fast you run, the time it takes for a train to travel from point A to point B on its track does not depend on your speed. Because, it is not the train that moves relative to observers, it is the train track that moves relative to observers [4]. Observers cannot derail a train.

The time is independent of the observers. A year is independent of the earth's gravity. Gravity is the interaction between masses. Gravity has no effect on the massless. Time is independent of gravity. It does not matter how fast or how slow a clock runs, it does not change the time "a year". It is the clock that is relative, not the time, "a year". It does not matter how fast you are moving, the year is still the year, one complete orbit of the earth.

If we cannot engineer an accurate device to break down a year into smaller intervals that are independent of the speed and gravity, it is an engineering problem, not the problem of time itself. We cannot force our problem of not being able to design accurate clocks to break down the time, a year, into manageable intervals on the time itself. Clocks have nothing to do with the time 'a year'. Clocks do not determine the time, a year, the amount of time the earth takes to make one orbit, just as a ruler does not determine the length. Rulers measure the length. Clocks break down the time, a year, into finer intervals.

Time itself does not depend on observer motion. It is the measuring instrument of time, the clock that is affected by the observer's motion. Time does not depend on gravity. It is the measuring instrument of time, the clock, that is affected by gravity. Gravity has no effect on time. Gravity has no effect on a massless entity. Gravity is an interaction between masses. A single mass has no gravity. A mass cannot exert a force on massless entities such as light or time. A mass itself cannot exert a force. It is the interaction of a mass with another mass that exerts equal and opposite forces on each other. A mass can generate a gravitational potential in the presence of another mass we have specified to be a unit mass. A gravitational potential can only exist in the presence of another mass. A point in space in the presence of a mass has no gravitational potential. A mass at a point in space in the presence of another mass has a gravitational potential; they exert a mutual gravitational force on each other.

Time cannot depend on the frame of reference. If time depends on the frame of reference, time will be directional. Time cannot be relative. Motion of an observer is directional. Time cannot be directional. If time is relative, time will be directional since the motion of an observer is directional. Time must be

scalar [6]. If the time is relative, time will not be unique.

Time is not a dimension. The time, a year, is a definition based on the motion of earth on its orbit. If we define a year as the one complete orbit of the earth, relative to any observer, the earth takes one year to go around the sun in its fixed orbit. An observer motion cannot change the orbit of earth. You cannot make the earth orbit faster or slower by flying since you cannot deorbit the earth by flying. The time, a year, is observer independent.

The motion of an object on its fixed path is observer independent. Observers cannot derail trains. A clock cannot change the time, a year. Once the time, a year, is defined it is fixed. Clocks that we engineered to break down the time, a year, into finer intervals cannot change the time, a year. The year can only change with the change of the parameters of the solar system, the mass of the sun, not by what clocks display. The reading on a clock cannot change the time, a year.

Definition: Clock

*A device that is engineered to break down the time, a year into smaller finer intervals, hour, minutes, and seconds. Although some clocks are able to break down the time, a year, into smaller finer intervals than the others, the principle behind all the clocks are the same. A clock, irrespective of its design, is just a metronome that comes in many forms.*

Lemma:

*The time, a year, is independent of the speed of the observers and the gravity.*

Corollary:

*The time, a year is not determined by clocks.*

In Special Relativity, a moving object contracts along the direction of motion relative to an external observer. If the moving object is a clock, as the speed of the moving object reaches the speed of light, the clock turns into a pancake relative to an external observer. You cannot expect moving clocks to function normally and display the correct time if the length of the clock shrinks along the direction of motion with the relative speed of the clock. In other words, it is the moving clock that is not expected to function correctly with the speed. You cannot expect the correct time from a distorted clock. It is the clock that is relative, not the time itself. The claim in Special Relativity that the time itself is relative is incorrect.

The shape of a clock is affected by gravity and hence it is the mechanism of the clock that is affected by gravity leading to incorrect reading or incorrect time on its display. Time itself is not affected by gravity. Time itself is not affected by speed. Both gravity and the motion distort a clock affecting the function of the clock resulting in an incorrect reading, incorrect time. You cannot expect the correct time from a distorted clock. A distorted clock cannot give the same time an

undistorted clock gives. The inability of the clocks we engineered to perform correctly in any environment is a problem of the clocks, not the time itself.

The reading on a clock does not determine the time unless the clock is used in an environment specified in the design specification, the manual. The mechanism of a clock is affected by speed and gravity resulting in incorrect reading on the display, or incorrect time on the dial. The reading on the dial of a clock does not determine the time, a year.

You do not need to force the speed of light to be a constant relative to inertial frames as Special Relativity does. Speed of light is naturally independent of observers since light propagates at constant speed on a fixed path. Any entity moving or [propagating on a fixed path is observer independent [4]. No Special Relativity and General Relativity are required.

*"We do not get old by the display on clocks that we have engineered. We cannot make ourselves grow old slower by placing ourselves in an environment where clocks run slower. We get old by the years, the orbiting of the earth, which is independent of clocks."*

*"The time, a year, is a year independent of whether clocks run fast or slow. A clock is an engineered device to break down the time, a year, into finer intervals, hour, minutes, and seconds. The time, a year, is not determined by clocks. We determine what clocks do and how clocks should function."*

*"If clocks determine how fast we age, it is equivalent to we ourselves are determining how fast we age since it is we who design the clocks, which is ridiculous."*

## XI. REALITY IS OBSERVER INDEPENDENT

In Special Relativity, time, mass, and the length in the direction of the motion of an object are relative under the unproven assumption that light is relative. According to Special Relativity, mass of an object and time vary relative to outside observers; these variations are observer perceptions that vary from observer to observer. These variations in Special Relativity are also reciprocal, an indication that these perceived variations are not real.

According to Special Relativity, if a person in a spaceship sees that the clocks on earth run slow, a person on earth also sees that the clocks run slow in the spaceship. This reciprocity of relativity is an indication that relativity is not reality. The contradictory nature of Special Relativity is clear from the claim that a twin sister in a spaceship stays young relative to her twin brother on earth, and also the twin brother on earth stays young relative to his twin sister in the spaceship; both cannot remain young. The reciprocity of relativity leading to impossible contradictions is an indication of the bizarreness of the Special Relativity. All these are a result of the unproven assumption in Special Relativity and in General Relativity that the light behaves as golf balls. Light cannot behave as golf balls. Light is not relative [6].

In General Relativity, acceleration and gravity are assumed to be equivalent relative to an observer on the accelerating body; it is also an observer's perception. These characteristics in both Special Relativity and General Relativity stem from the assumption that the light is relative and behaves as golf balls. Further, in both Special Relativity and General Relativity, space and time are assumed to be interlinked as spacetime by a spacetime function which is dependent on observers. In General Relativity, spacetime is warped by the mass of an object; it is also an observer perception that varies from observer to observer since the spacetime function is dependent on the observer.

Both Special Relativity and General Relativity derailed the light relative to observers. Observers cannot derail light. The speed, direction and the path of light can only be altered by a medium, not by observers. The speed, direction and the path of light can only be altered by gravity. Gravity is an interaction between masses. There is no gravity between a mass and the massless spacetime. A mass cannot affect massless.

A burst of light fired horizontally through a hole on the wall of a vertically accelerating cabin does not bend or change the direction. It is only that the cabin is closing in to the light burst parabolically. It is only that an observer in the cabin has the perception of light taking a parabolic path downward as a result of his vertical motion and the lack of vertical motion of the light burst. In reality, a horizontally moving light burst travels horizontally as if there was never an accelerating cabin. Since the observer is moving vertically at an acceleration, an observer inside the cabin perceives as if the light burst is having a downward acceleration. If the cabin is stationary on a gravitational object, a horizontal light burst entering through a hole on a vertical wall would not be any different from its actual horizontal path relative to an observer inside the cabin since the observer is at standstill. Gravity cannot bend light. Observer perception of bending is not an actual bending of light.

The path of a horizontal light burst in a vertically accelerating cabin is not the same as the path of a horizontal light burst in a cabin at standstill on a gravitational object. Einstein's claim that an observer inside a cabin cannot determine if the cabin is stationary on a gravitational object or it is accelerating in space at constant acceleration is false. Einstein's equivalence principle is false. Observer perception cannot determine reality. A cabin at standstill on a gravitational object is not in an acceleration. There is no acceleration without the change of position. There is no acceleration without motion. Gravity is not an acceleration. A falling apple is at an acceleration. An apple on a tree is not in an acceleration.

The mass of an object is independent of the speed of the object. The mass of an object is independent of observers. If an observer finds that the mass varies with the speed, then, it is the measuring instrument

that is relative, not the mass itself. It is the mechanism used to engineer the measuring device that is speed dependent, not the mass itself. The time, year, one orbit of the earth, is independent of the clocks. If the reading of clocks differs with the speed, it is the mechanism of the clock that varies with the speed, not the time itself.

We cannot use the devices we engineer to make measurements to claim that the variation of the measurement of an entity in different environments is a result of what is being measured is affected by different environments. It is the measuring instrument that is relative, not what is being measured. The speed of clocks we engineer do not determine how fast or how slow we age. Time and mass are observer independent.

According to General Relativity, the mass of an object warps space. But the problem is that it is not the mass that occupies the space, it is the volume that occupies the space. The spacetime that is warped by mass  $m$  of smaller volume  $v$  cannot be the same as the spacetime warped of the same mass  $m$  of bigger volume  $V$ . If the space is warpable, the amount of warp or the curvature must depend on the volume of an object, not the mass of an object. And hence, the claim that the spacetime warp depends on the mass is incorrect.

Observer dependents cannot be the reality. Reality cannot be observer dependent. Reality must be observer independent. This is also clear from the Doppler effect. The Doppler effect is also the observer's eyes and ears only, not the reality. The frequency and wavelength of a wave is not changed by the motion of the source/observer even though the observer detects redshift/blueshift of both frequency and wavelength in the Doppler effect. The detection of frequency shift in the Doppler effect is an indication that the Doppler effect is not real. The motion of an observer or the source cannot change the frequency of the wave propagating from the source to observer.

Special Relativity and General Relativity, and the Doppler effect cannot represent reality. Alas, Special Relativity and General Relativity run on a manufactured time; they run on the average return time of a beam of light. Average return time cannot be obtained online, in real time given by clocks. Average return time can only be calculated offline for the past. Time does not stop until the average return time of a light beam is calculated. What is designed for average return time of a beam of light does not work for oneway time given by ordinary clocks and vice versa.

A clock based on the average return time also depends on the speed of light where the clock is at. Since the speed of light depends on the medium and the density of a medium, a clock based on the average return time of a beam of light depends on the medium and the density of the medium. As a result, the Special Relativity and General Relativity that run on clocks based on the average return time depend on the medium and the density of the medium. Since

the density of a medium depends on gravity, a clock based on the average return time of a beam of light used in the Special Relativity and General Relativity also depends on the gravity. Special Relativity and General Relativity cannot run in oneway real time given by clocks. Observers cannot determine reality. Reality should not depend on observers. Since time and mass are relative, time and mass are directional in Special Relativity. In addition, if time, mass and spacetime function are relative, they will be directional since the speed of an observer is directional.

If an experiment indicates that time depends on the speed, it is not the time itself that depends on the speed, it is the instrument that is used to measure the time that depends on the speed. If an experiment indicates the mass depends on the speed, it is not the mass itself that depends on the speed, it is the instrument that is used to measure the mass that depends on the speed. The time, a year, and the mass of an object are observer independent.

*"It is the measuring instrument that is relative, not what is being measured. Time is not relative. Mass of an object is not relative."*

Time and mass do not depend on gravity. If experiment indicates that time on a clock depends on gravity, it is the clock itself that depends on gravity. Measuring instrument is an engineered device. Engineered instruments give the correct reading if the instrument is used in an environment that is given in the specification. Engineered instrument does not give correct measurement outside the specified environment.

A clock does not determine time. Clock is just an instrument to measure time. In fact, a clock is an instrument engineered to break down the time, a year, into small intervals, hour, minutes, and seconds. Clocks do not determine the time, a year. We cannot claim that the time varies with gravity just because a clock displays different values under different gravities. We cannot claim that the time varies with speed just because a clock displays different values under different speeds. We cannot claim mass depends on the speed just because we measure different masses for different speeds. Such claims are experimental misinterpretations.

Clocks can run fast or slow depending on the environment clocks are in. The speed of clocks cannot change the time, a year, one orbit of the earth. It does not matter whether you are traveling in a spaceship, or at standstill on earth, the number of earth years you have lived are the same. The time, a year, one orbit of the earth, is not determined by clocks. Clocks are designed to break down the time, a year, into finer intervals. If the time on clocks does not agree with the time, a year, one orbit of the earth, it is an engineering design problem, not a problem of laws of nature. The devices we engineer cannot determine how fast or how slow we age.

*"Clocks do not determine earth year or Mars year. We age by years, not by the time on clocks, not by the devices we engineer."*

*"What is relative are measuring instruments, not what is being measured."*

## XII. GRAVITY CANNOT BEND LIGHT

Everyone talks about gravity bending light. Yet, it has never been proven. If gravity bends light, light cannot propagate at constant speed in vacuum. Light cannot take a curved path at constant speed. Bending of light by gravity is a proclamation of Einstein.

The proclaimed bending of light originated from the equivalence principle. Equivalence principle claims that gravity and acceleration are equivalent. The equivalence principle claims that a passenger in a cabin cannot distinguish if the cabin is stationary on a gravitational object or if it is accelerating, which is false since light is not relative.

An outside observer can indeed say if a cabin is sitting stationary on earth or if it is accelerating. So, it is only a question for a passenger inside a cabin. Einstein started the Special Relativity with a picture of a cabin moving horizontally at constant speed. He assumed firing a beam of light vertically from the floor of a horizontally moving cabin at constant speed. Without any justification, Einstein represented the path of a vertically directed light beam from the bottom of a horizontally moving train as vertical relative to a passenger in the cabin; there was no explanation. When you represent the path of a vertically fired light pulse from the bottom of a horizontally moving train relative to an observer inside the train as vertical, that representation is equivalent to the proclamation that light behaves as golf balls or light is relative. By proclamation, Einstein has given light a virtual momentum. By proclamation, Einstein has given light a virtual mass.

In Einstein's Special Relativity, a beam of light behaves as a baseball, a totally false premise. For this representation to be true, light must be relative. In other words, for this representation to be true, it should be able to transform the Maxwell equations onto an inertial frame; this is not possible [6]. Light is not relative. Light does not behave as a baseball in a moving cabin. Vertical beam of light from the bottom of a moving train does not take a vertical path relative to the cabin just because Einstein said so. Light has no momentum. The massless has no momentum.

Einstein used his false claim that a beam of light behaves as a baseball and a vertical beam of light in a horizontally moving train takes a vertical path relative to a passenger inside the cabin to make a new claim that it is not possible for a passenger inside the cabin to tell if the cabin is moving or stationary, which was the claim made by Galileo before much is known about the light. When Galileo claimed that it is not possible for a passenger in a moving cabin at constant speed to determine if the cabin is moving or

stationary, he was claiming that there is no experiment a passenger inside can carry out using a mass in order to determine if the cabin is moving or stationary. Galileo was not referring to light; at the time, not much was known about the light; Galileo had no idea if the light was relative or not at the time (the time is not determined by clocks we engineer). However, light is not relative, and hence observers in a closed cabin can determine if the cabin is stationary or moving at constant speed using a beam of light.

In Einstein's Special Relativity, a vertical beam of light from the bottom of a horizontally moving cabin takes a proclaimed vertical path relative to a passenger inside a cabin. The same light beam takes an angular path angled towards the direction of the cabin relative to a stationary observer outside, just like the path a vertically thrown baseball in the cabin would have taken. So, in Special Relativity, the path of light changes or bends relative to outside observers while the path is unaltered relative to passengers inside the cabin.

Einstein not only gave the light a false momentum, but also bent the path of light relative to an observer. The path of light can only be altered by a medium, not by observer motion. The fact is that the observers cannot derail a train. Observers cannot derail light. In the case of light, the path of light and the speed of light can only be altered by the change of a medium. Observers cannot change the path of light. It is the train track that moves relative to an observer, not the train [4]. Observers cannot derail light.

Now consider Einstein's accelerating cabin in General Relativity. In this case, Einstein assumed a horizontal pulse of light entering from outside through a hole on the vertical wall of a vertically accelerating cabin far away from any gravitational object. According to General Relativity, the light beam takes a straight path relative to an outside observer since the light beam entered the cabin through a hole from outside. According to Einstein, this same light beam bends on a downward parabolic path against the direction of the acceleration relative to an observer inside the cabin by proclamation, not for a valid reason since observers cannot bend light. A beam of light as a whole can shift relative to observers, but cannot bend relative to observers [4]. Bending alters the path. Shifting does not alter the path. The direction of propagation of light is determined by the medium, not by observers. Observers cannot bend light. In addition, you cannot send a horizontal light beam from outside through a hole on the vertical wall of a cabin since the cabin is moving vertically. You can only send a short light pulse.

The direction of a light burst cannot change relative to observers. Observers cannot bend light. It is only that a light pulse, as a whole, shifts relative to an observer in the accelerating cabin on a parabolic path downward against the direction of the acceleration while the light is propagating horizontally within the pulse [4]. Since light has no momentum, it does not

matter whether a light beam is entering horizontally from outside through a hole on the vertical wall of the cabin or a horizontal light beam is fired inside the cabin from one wall to the opposite wall, the result would be the same. No massless entity can be relative.

Einstein's principle of equivalence falsely proclaims that gravity is the same as acceleration. Under the false assumption that light is relative, Einstein claimed, a horizontal light beam from outside entering into a vertical accelerating cabin through a hole on the vertical wall will bend on a parabolic path downwards relative to an observer inside even though in reality the light burst shifts on a parabolic path downwards while the wave within the burst remains propagating horizontally.

Under the false equivalence principle or on the false assumption that a stationary cabin on a gravitational object with gravity  $g$  is the same as an accelerating cabin with acceleration  $g$ , Einstein claimed that a horizontal beam of light in a stationary cabin on earth or any gravitational object must also bend on a parabolic path in the direction of gravity. This is the birth of the false concept of gravity bending light. "Gravity bending light" is a false proclamation, not a proven fact. Gravity has no direct interaction with the massless.

Since light is not relative, an observer inside a cabin can determine if the cabin is stationary, moving at constant speed or accelerating. This does not contradict Galileo's claim that an observer inside a closed cabin cannot determine the state of a cabin from inside the cabin by throwing golf balls, not by light beams. In his statement, Galileo never refers to light since not much was known about the light. Einstein tried to fit light also into the frame of Galileo's claim by giving light an artificial momentum. Einstein thought he must fit light into Galileo's claim and he achieved it by giving the light imaginary momentum. Galileo would have objected to Einstein's approach if he had been alive. Galileo would not have given light an artificial momentum to include light into Galileo's claim.

There are several major errors or mistakes in Einstein's approach to Special Relativity and General Relativity:

1. Gravity is not acceleration. Gravity is not the same as acceleration. A stationary cabin on earth is not accelerating. A force does not generate an acceleration unless the object is free to move. There is no acceleration without motion. A falling apple has an acceleration. An apple on a tree does not have an acceleration. Newton's  $F=ma$  does not apply for stationary objects; it only applies for objects in motion. Acceleration requires change of position since  $a=d^2x/dt^2$ . If there is no change of position,  $a=0$ . As a result,  $m=F/a$  does not apply for stationary objects even though  $F \neq 0$  for an object of finite mass  $m$  at rest on earth. Einstein's equivalence principle is incorrect.

2. Massless entities have no momentum. Light has no momentum. Light cannot be given momentum by proclamation. A beam of light in a moving cabin cannot behave as a baseball. A vertical beam of light in a horizontally moving cabin cannot have a vertical path relative to an observer inside the moving cabin. Einstein's starting assumption that light is relative is incorrect, never proven. Einstein's starting assumption that light is relative is invalid and it is contrary to reality. You cannot force a momentum on massless by proclamation.

3. Observers cannot bend light. The velocity of light is fixed in a vacuum and can only be altered by a medium. The speed and the direction of light can only be altered by a medium. The direction of propagation of light cannot be changed relative to observers. The direction of light can only be altered by the change of medium or by the change of density of the medium. Observers cannot derail trains. Observers cannot change neither the path of light nor the speed of light on its fixed path that can only be altered by a medium.

Einstein forced the light to be relative by assumption in order to make a vertical light beam in a horizontally moving cabin to remain vertical relative to the cabin so that the light also fit into Galileo's claim that the motion mechanics is independent of inertial frames. To fit the laws of light into Galileo's claim that the motion mechanics are frame independent, light must be given an artificial momentum. So, Einstein forced a momentum on light. It is this forcing of a fake momentum on light that altered reality by Modern Physics. Light has no momentum. Light is not relative.

We do not need a Special Relativity for the laws of physics for objects of mass and for propagation of light to be frame independent. Light propagates in space and hence light is naturally observer independent. Light does not propagate relative to inertial frames [6]. Propagation of light is not relative and hence laws of physics for propagation of light are observer independent. Motion of objects of mass is relative and hence the laws of physics for the motion mechanics of masses are frame independent. Laws of physics are naturally frame independent. No Special Relativity and General Relativity are required.

Gravity cannot change the path of light in a vacuum. Gravity cannot bend light. If gravity bends light, the speed of light cannot be a constant. Light cannot take a curved path at constant speed. Light cannot take geodesics at constant speed. For light to propagate on geodesics, light must have a mechanism to detect geodesics. Light has no mechanism to determine geodesics. Light is blind to gravity. Light only responds to the changes in the medium. The change of the medium or the change of the density of the medium are the only means to change the speed of light and the direction of light. Gravity can change the path of light if the path is in a medium. Gravity changes the density of the medium and the change of the density of the medium changes the path of light.

If a horizontal light pulse is fired inside a vertically accelerating cabin, relative to an observer inside the cabin, the horizontal light pulse shifts against the direction of motion on a parabolic path downward while the light propagates horizontally within the burst. Observers cannot change the direction of light on its fixed path. Observers cannot alter the speed of light on its fixed path. Light is not relative. It is the train track that shifts against the motion of observers, not what is moving or propagating on its fixed track [4].

Light has no momentum. It does not matter how big the mass is, if the mass is in a vacuum, light will not be refracted by the mass. Gravity has no effect on light in a vacuum. Gravity has no direct effect on light. The effect of gravity on light is a secondary effect; any effect of gravity on light is through a medium. Gravity cannot bend light. Gravity and acceleration are not the same. It is the medium that mediates an interaction between gravity and light.

General Relativity is a gravitational Hole-theory. Objects cannot fall directly onto earth as they do if they follow the curvature of the warped space in a Hole-theory such as General Relativity. The curvature of spacetime cannot bring a falling object directly onto the object that generated the curvature. Arthur Eddington has either knowingly or unknowingly misinterpreted the solar eclipse observations for the sole purpose of justifying the General Relativity. The bending of light near the sun is due to the significantly large density gradient of the medium that surrounds the sun.

Gravity cannot bend light. Observers cannot bend light by running away from a beam of light. Light is not particles. Particles are not waves. Light has no mass, no momentum, no kinetic energy, no temperature, no entropy. Electromagnetic potential of light is not energy until it is converted into kinetic energy in the presence of electrons, charged masses.

The invisible large gravitational attraction point at the center of every galaxy is the center of mass of a galaxy. Although the center of mass of a galaxy has all the attributes of a blackhole (blackpeak), it is not a blackhole (blackpeak). There are no blackholes (blackpeaks) at the centers of galaxies. Gravity cannot bend light in the absence of a medium or in a vacuum. Light is not relative. Light cannot detect geodesics, and hence light cannot propagate on geodesics. Gravity cannot alter time and frequency.

The earth making one complete orbit is the time, a year. The time, a year, is independent of clocks. The time, a year, is independent of the speed of the observers and the mass of the earth, the gravity. It is the orbit as a whole that moves against the motion of the observers, not the orbiting object, the earth. The time, a year, is affected by the changing mass of the sun. A year is unaffected by the readings on clocks.

*"A gravitational object generates a density gradient of the medium that it surrounds. A density gradient of the medium changes the speed of light, which results*

*in the bending of light and the shift of wavelength. Bending of light near a gravitational object is not a direct effect of gravity on light. It is a result of gravity affecting the medium, and the change in the medium affecting the propagation of light. There is no bending of light and a wavelength shift near a gravitational object in the absence of a medium, in a vacuum. Gravity cannot bend light directly."*

### **XIII. VELOCITY OF LIGHT IS INDEPENDENT OF OBSERVERS**

Light comes in bursts since light is released in bursts by a source. These bursts are not particles. Particles cannot propagate. If light comes in light quanta, particles, or photons, light quanta will be in limbo in a medium boundary since a light quantum is indivisible into transmitted and reflected parts. Probability cannot determine whether a light quantum will be transmitted or reflected at a boundary. There is no one there at a boundary to throw a dice in directing light quanta traffic whether a light quantum should go through or reflect back.

Light bursts are waves. A light burst has a fixed speed and a fixed direction on a fixed path. Once a light burst is out of a source, its path is fixed in the vacuum, and can only be altered by a medium. The speed of light on its fixed path is determined by the vacuum and can only be altered by a medium. The speed of light and the path of light are observer independent [4, 6].

It is the light burst as a whole that shifts relative to the motion of an observer. The speed of light on its track remains observer independent. The direction of light on its fixed path remains observer independent. The path of light is only alterable by a change of the medium and hence remains observer independent. What changes is the distance to the path of the light burst as a whole relative to an observer. It is the wave burst as a single entity that shifts relative to the observer motion. Observers cannot bend light. Light does not bend relative to observers. A light burst, as a whole, moves against the direction of the observer while the direction and the speed of light on its path remain unaltered relative to the motion of the observer [4]. It is the train track that shifts relative to observer motion while the speed of the train and the direction of the train on its fixed path remains unaltered.

In Special Relativity, in the case of a vertically released light burst in a horizontally moving cabin at constant speed, the wave burst as a whole shift on an angular path relative to the cabin while maintaining the direction of the light burst vertical and the speed on its vertical path constant [4]. There is no bending of the light here. Relative to an observer outside, the light is traveling on a vertical path at constant speed.

Relative to an outside observer, the propagation of light and the motion of the cabin are two separate independent events that have no connection since light has no momentum. The massless has no momentum. Light has no mechanical energy, no

kinetic energy. No entropy. No Special Relativity is required for light to maintain constant speed since the speed of light on its fixed path is observer independent.

In General Relativity, in the case of a horizontally released light burst in a vertically moving cabin at an accelerating speed, the wave burst as a whole shift on a parabolic path downward relative to the cabin while maintaining the direction of the light burst horizontal and the speed on its horizontal path constant. There is no bending of light here. Relative to an outside observer, the burst is propagating horizontally on a straight horizontal path. It is the horizontally propagating light burst as a single entity that shifts on a parabolic path downward relative to an observer inside the vertically accelerating cabin. The burst of light and the motion of the cabin are two disconnected entities relative to any observer inside or outside. A baseball in a cabin is a part of the cabin. Unlike a baseball in the cabin, a light burst is not a part of the cabin. Propagation of light at constant speed on its fixed path that can only be altered by a change of the medium is independent of the motion of the cabin.

Although a burst of light shifts as a whole on a parabolic path against the motion of the cabin relative to an accelerating cabin, there are no such shifts of light bursts on a parabolic path in a stationary cabin on earth or a cabin sitting on a gravitational object. A horizontal light burst in a stationary cabin on earth takes a horizontal path relative to the cabin as well as relative to an outside observer.

In the Lorentz Transform, it is not the speed of light that is independent of observers, it is the velocity of light that is independent of observers. In Maxwell equations, it is not just the speed of propagation of light that is constant, the direction of light is also constant. Einstein disregarded the fact that the path of light is also a constant that can only be altered by a medium, not by observers. Special Relativity and General Relativity derailed the light. Special Relativity and General Relativity are a contradiction to both Maxwell equations and Lorentz Transform since the direction of light is observer dependent in both Special Relativity and General Relativity.

*"The Lorentz transform requires the direction of light to be observer independent. Both Special Relativity and General Relativity violated the Lorentz transform by allowing the direction of light to be observer dependent. Observers cannot derail light."*

*"In Maxwell equations, the speed of light as well as the direction of light are constants that can only be altered by a medium. Both Special Relativity and General Relativity violated the Maxwell equations by allowing the direction of light to be observer dependent. Neither the observers nor the gravity in a vacuum can derail light."*

Speed of light is determined by the Coulomb and Ampere constants in a vacuum. Coulomb and Ampere constants do not require a medium and exist in a

vacuum. On the other hand, the permittivity and permeability have no existence without a medium; they do not exist in a vacuum. There is no vacuum permittivity or vacuum permeability. Permittivity and permeability are defined as ratios of the Coulomb and Ampere constants in a medium to Coulomb and Ampere constants in a vacuum. When we say the permittivity and permeability of a vacuum, we are referring to the Coulomb and Ampere constants in the vacuum. The relative permittivity and the permeability of a medium are in fact the actual permittivity and the permeability of a medium.

#### XIV. STAR REDSHIFT/BLUESHIFT CANNOT BE ATTRIBUTED TO DOPPLER EFFECT

The frequency, wavelength, speed, and the direction of propagation of light are independent of the motion of the source or/and observer. The Doppler effect cannot change the actual wave a source is emitting. The Doppler effect cannot change the actual frequency of the wave a source is emitting. The Doppler effect cannot change the actual wave that is already propagating between the source and the observer. The motion of a source cannot change the wave that is already propagating in between the source and the observer. The motion of an observer cannot change the wave that is propagating from the source to observer. The motion of an observer does not determine what a source is emitting, what frequency it is emitting.

*“The Doppler effect is for an observer’s eyes and ears only.”*

The observed redshift and blueshift due to the motion of the source/observer do not take place in the propagating wave itself. The actual speed, frequency, and wavelength of the propagating wave are unchanged. Only the number of wave bursts an observer receives per second varies with the motion of a source or/and an observer indicating a redshift or a blueshift.

Once a wave burst is released from a source, it is not anchored to a source. The motion of a source and/or an observer cannot change the actual frequency and wavelength of a wave that propagates from the source to an observer. When the source or/and observer is in motion, the measured frequency is not the actual frequency of the wave. Actual frequency of the wave is unaltered in the Doppler effect. The Doppler effect is for observers' eyes and ears only. The Doppler shift is exclusively an observer/detector phenomenon. Not a phenomenon that is present in the wave.

*“The apparent frequency and wavelength of light an observer measures are not the same as the intrinsic frequency and wavelength of the source unless both source and observer are relatively stationary.”*

The frequency of light emitted by a source is determined by the internal atomic structure of the

source. A source emits light in bursts. Each burst contains a wave of frequency  $f$  determined by the source and it propagates at constant speed  $c$  in a fixed direction that can only be altered by a medium. Propagation of light is observer independent. However, the motion of light bursts is observer dependent [4]. It is the path of light that is shifted against the motion of an observer while remaining the speed and the direction of light on the path unaltered. It is the train track that shifts against the motion of an observer, not the train itself [4]. No Special Relativity is required to keep the speed of light constant on its fixed path relative to observers.

Once the light is emitted, the frequency of a wave is unchanged. The speed of propagation of the wave on its track is unchanged. Light travels on its track at constant speed in a constant direction and they are independent of observers. It is a burst of light as a whole that is observer dependent. It is the path that shifts relative to observers, not what is propagating on its path. It is the train track that shifts relative to observer motion, not the train itself. The speed of the train and the direction of the train on its fixed track remain unaltered relative to any observer.

Light propagates in space even in the presence of a medium. If the medium is pulled out, light does not move with the medium, light remains propagating in the space. Light does not propagate on inertial frames. Maxwell equations for propagation of light cannot be transformed onto inertial frames [6]. As a result, the laws of propagation of light are naturally frame independent. Special Relativity and General Relativity are incorrect since light is not relative. Special Relativity and General Relativity are not required since any entity moving or propagating on its fixed path is naturally observer independent.

Observers cannot change the frequency of light. Observers cannot change the path of light. Observers cannot change the speed of the propagation of light on its fixed track. Gravitational objects cannot change the frequency of light. Light has no means of detecting the presence or absence of a gravitational object in a vacuum. Light only reacts to the change of medium. Gravitational object in the presence of a medium generates a change in the medium. A change in a medium refracts light.

It does not matter how dense a medium is, a medium cannot change the frequency of light. The motion of the source cannot change the frequency of the source, the direction of the light, and the speed of the propagation of light. The motion of the observer cannot change what light sources do. The motion of an observer cannot change the frequency, the direction, and the speed of light on its fixed track that can only be altered by a medium. It is a wave burst as a whole that shifts relative to an observer. It is the fixed path of a wave that shifts relative to an observer. It is the fixed train track as a whole that shifts against the observer motion just as a mountain shifts relative to a runner.

If both source and observer are relatively stationary, the number of wave bursts an observer will receive per second is the same as the number of wave bursts a source releases per second. In other words, the received burst length is the same as the source burst length if the source and observer are relatively stationary. The source frequency is always independent of the source or observer motion.

However, if a source of light is moving, then it can affect the number of wave bursts an observer receives per unit time. If the source is moving away from the observer, or the observer is moving away from the source, or both, the number of wave bursts received per unit time will be reduced or redshifted. The wave burst rate has decreased or redshifted relative to the observer (not in reality) if the motion of the source or the observer is such, the relative distance between them increases. However, the number of wave bursts actually released by the source and propagating in space is unchanged, and is independent of the motion of the source and/or the observer.

If the source or the observer is moving so that the relative distance between them decreases, the observer will receive more wave bursts per second indicating that the wave bursts rate relative to the observer has increased or blueshifted. However, the number of bursts actually released by the source and propagating in space is unchanged with the source and/or observer motion.

Irrespective of the motion of the source or the observer, light propagates in a fixed direction at a constant speed that can only be altered by a medium. It is only the track or the path of light as a whole that shifts relative to observers. It is the wave burst as a single entity that shifts relative to observers. It is the number of wave bursts an observer receives per unit time that changes relative to observers. The actual frequency never changed; the propagating wave in space between the source and the observer has the same frequency as the frequency it was released by the source.

Your age is not determined by the ticking of the clocks. The age is determined by the number of orbits earth has repeated since the birth. An earth year is one whole orbit of the earth. The time, a year, is not determined by the ticking of clocks. Clocks are engineered to break down the time, a year, into finer intervals. The time, a year, is independent of the display of clocks. The time, a year, is independent of observers and earth's gravity.

*"We define one earth year as one complete orbit of the earth. Clocks are engineered to break down the time, an earth year, into finer intervals, hours, minutes, and seconds. Clocks do not determine the time, a year. Time, a year, is independent of clocks. How old you are is not determined by clocks. Whether you are on a spaceship, on earth, on mars, your age in earth years is the same."*

Speed of light on its fixed track is independent of observers. Relativity does not change reality. Observers cannot change the direction of light. Neither the motion of the observer nor the motion of a source can bend light or change the direction of light. The motion of the source and/or observer cannot change the speed of light, and the actual frequency and wavelength of the propagating light.

The velocity of light is observer independent. The velocity vector shifts unaltered relative to observer motion. A light burst shifts relative to an observer without altering the direction of propagation and the speed of propagation on its fixed track. It is the same as a train on its track at constant speed relative to an observer. Observers cannot derail trains. Propagation of light is not relative. Propagation of light is frame independent since light propagates in space, in the vacuum. The time, a year, is not relative. Clocks do not determine the time, a year.

*"Light does not propagate relative to moving frames. Light propagates in space or in the vacuum even in the presence of a medium."*

*"The laws of physics are frame independent for two different reasons, one reason for the motion mechanics (the objects of mass), and another reason for the propagation of light (the massless). The laws of motion of masses are frame independent since the motion of objects of mass is relative. The laws of propagation of light are frame independent since the propagation of light is not relative."*

Doppler effect only applies for the propagation of light for short distances in a homogeneous medium. The Doppler effect requires the direction of light to be unchanged. Light from galaxies travels many light years in varying density gradients. As a result, light on its way towards the earth undergoes many speed changes and as a result many refractions or bendings. The Doppler effect does not apply in situations where the path of light undergoes any speed variations and hence path variations.

Redshift and blueshift of distant galaxies cannot be attributed to the Doppler effect. The redshift and blueshift of galaxies are a result of the change of the medium as well as a result of the change of density gradient of many media that light passes through as it reaches the observers on earth. The galactic redshift or blueshift cannot be attributed to the Doppler effect. Doppler effect cannot change the actual wavelength or frequency of a wave. The shift in frequency and wavelength in the Doppler effect is an observer's perception, not real. The actual propagation speed, frequency, and the wavelength of a wave that is propagating in space between the source and the receiver is unchanged in the Doppler effect. The Doppler effect does not apply for an inhomogeneous medium. The Doppler effect requires a homogeneous medium. The medium from galaxies to earth is not a homogeneous medium.

*“The Doppler effect requires a homogeneous medium. The medium between stars and earth is not homogeneous.”*

*“The galactic redshift and blueshift are not a result of a Doppler effect.”*

*“Expanding space cannot alter distance between gravitationally bound objects and hence galactic red shift cannot be attributed to an expanding universe. Expanding universe cannot generate both redshift and blueshift.”*

The motion of a source cannot change the frequency, wavelength, and the speed of light. The motion of an observer cannot change the frequency, wavelength, and the speed of light. The Doppler effect is for the observer's eyes and ears only. The Doppler effect is not an actual shift of frequency and wavelength of a propagating wave. In the Doppler effect, an observer detects as if the frequency and the wavelength have shifted even though no actual change of the frequency and wavelength of the propagating wave have taken place. In the Doppler effect what you see or hear is not what is exactly there. What you detect in the Doppler effect is not any change of the wave, a perceived change due to the relative motion of you and the observer.

It is also noteworthy that the different stars in the same galaxy have different redshifts as well as different blueshifts since the density gradient of the medium that surrounds a star and the density gradient of the medium that light has to pass through in space to reach the earth varies from star to star. The density gradient of the medium that surrounds a star is one of the determining factors of the amount of redshift. A redshift of a star cannot be attributed to a radial motion of the galaxy since each star in a galaxy has its own unique redshift depending on the density gradient of the medium surrounding the star.

#### **XV. BLACKHOLES (BLACKPEAKS) ARE NOT WHAT THEY ARE PORTRAYED TO BE; THEY ARE DETECTABLE AT FREQUENCIES BELOW THE VISIBLE SPECTRUM**

*“Blackholes have no holes. Blackholes are in fact Blackpeaks or Blackmountains.”*

In General Relativity, blackholes (blackpeaks) are presented as a mathematical abstraction of singularities. Blackholes (Blackpeaks) have nothing to do with the spacetime singularities of General Relativity that exist only in textbooks. For the propagation of light at constant speed in space, light does not have to zip up space and time by the speed of light  $c$ . The spacetime function in Special Relativity and in General Relativity are not unique; it has no physical existence [6]. Mathematical abnormalities such as infinities are abstract notions that only exist on paper, they do not have a physical existence. Space and time are mutually independent. Light can propagate at constant speed on a fixed path without creating a spacetime function. Blackholes

(Blackpeaks) are not what General Relativity has portrayed for them to be. They are not mathematical singularities. They are objects of extraordinary mass density with finite mass and finite non-zero volume.

In physics, blackholes (blackpeaks) are portrayed as some mysterious objects that gobble up everything nearby including light. According to physics textbooks, blackholes (blackpeaks) don't even seem to be capable of radiating without Quantum Mechanics. What blackholes (blackpeaks) have to do with Quantum Mechanics? Planck's blackbody spectrum is cavity dependent and hence the energy quantum  $e=hf$  fails where it started. Energy cannot be quantized. If energy is quantized, the spectrum cannot be continuous [2]. Blackholes (Blackpeaks) can radiate naturally without the help of artificial Quantum Mechanics. Particles do not behave as waves, waves are not particles. Light does not come in particles or photons, light comes in wave bursts. Light has no mass, no energy, no momentum, no entropy, no temperature. Einstein gave light a hypothetical momentum by proclamation by derailing light relative to observers. Blackholes (Blackpeaks) exist not as mysterious holes in space that gobble up anything and everything that are nearby. Blackholes (Blackpeaks) exist as natural objects of large mass densities with finite mass and finite non-zero volume. Volume of an object of mass cannot be zero. There is nothing special or strange about blackholes (blackpeaks). Despite what the name suggests, there are no holes in blackholes (blackpeaks).

A gravitational attraction that exists without having an observable object is claimed to be a blackhole (blackpeak). Everything nearby appears to be attracted to something that appears to be nothing. Or, in other words, Nothing that is visible is attracting everything nearby. There is no visible object, but objects of mass seem to be attracted to a point. Although it is claimed that even light cannot escape the attraction of a blackhole (blackpeak), this claim is false. Gravity cannot affect light, the massless. Gravity cannot exert any force on light. Gravity has no direct effect on light. It is only that the light cannot escape the strong refraction near a blackhole (blackpeak) due to the large density gradient of the medium that the blackhole (blackpeak) surrounds. The existence of such a gravitational point we can confirm since we can see objects are attracting to that point. If nearby objects are attracted to a point that we are not able to see, that point must have a large mass density although it is invisible. Such invisible points of attraction with large invisible mass density that attracts nearby objects have been named as blackholes (blackpeaks).

So, blackholes (blackpeaks) have a large mass density. For an object of mass to attract all nearby objects, the nearby objects must be able to reach closer and closer to the center of the mass of the gravitational object, and hence it must have a smaller radius resulting in a large mass density. Strong gravitational attraction is a result of not just a large

mass, but also a large mass density. So, a blackhole (blackpeak) must also have a large mass density since any nearby object can be attracted onto it (not fall into it since there is no hole there). It is also claimed in physics that even light cannot escape from a blackhole (blackpeak), and that is the reason why we are not able to see a blackhole (blackpeak); this claim is false since gravity has no direct effect on light, the massless. Any effect of gravity on light is a secondary effect and must be through a medium.

It is claimed in physics that the light can neither come out of a blackhole (blackpeak) nor can propagate near a blackhole (blackpeak) because blackholes (blackpeaks) suck the light up. If light cannot escape the attraction of a blackhole (blackpeak), it is an indirect way of claiming gravity attracts light as it is done in General Relativity, which is false. The claim in physics that blackholes (blackpeaks) attract light is false. It does not matter how large the mass of a gravitational object is, gravity cannot attract light, the massless.

Gravity is the interaction between masses. There is no gravity without the interaction of objects of mass. Gravity only interacts with objects of mass. Light has no mass. Light has no momentum. Gravity cannot directly interact with light. Light propagates on a fixed path at constant speed in space. The speed of light and the path of light can only be altered by a medium. The speed and the path of light cannot be altered by anything else except the change of a medium or medium density. The frequency of light is unaffected by a medium. Frequency, wavelength, speed, and the direction of light are unaffected by the motion of the observer and/or the source. Light is unaffected by gravity in a vacuum.

It does not matter how big a gravitational attraction a blackhole (blackpeak) has, a blackhole (blackpeak) cannot attract light. If light cannot propagate near a blackhole (blackpeak) without falling into it, it is not because gravity attracts light. Gravity cannot attract light, the massless. There is a reason for light's inability to come out of a blackhole (blackpeak), and for light's inability to propagate near a blackhole (blackpeak) without falling onto it. In the case of blackholes (blackpeaks), what appears to be happening superficially is not exactly what is taking place in hindsight, in reality.

Since we are unable to see a blackhole (blackpeak), it must be true that no light is coming out from a blackhole (blackpeak), and light cannot propagate even near a blackhole without being bent towards the blackhole (blackpeak). The reason is not gravity sucking up light because gravity cannot suck light up, the massless. Although there is a partial truth to the claim that the light cannot come out of a blackhole (blackpeak) and cannot propagate near a blackhole (blackpeak) without bending towards a blackhole (blackpeak), the claim that light cannot escape a blackhole (blackpeak) because gravity directly interacts with light is false.

Gravity cannot interact with light directly. Gravity by itself cannot bend light. Irrespective of whether a gravitational object is surrounded by a medium or by a vacuum, gravity cannot alter the frequency of light. Gravity by itself cannot shift the wavelength of light. Gravity cannot affect the time itself. Gravity can affect the clocks, but clocks do not determine time. The only thing a gravitational object can do is to attract a medium and hold onto it. Larger the mass of the object higher the density of the medium as well as the density gradient of the medium. Even though gravity has no direct effect on light, the changes in the medium affect the propagation of light. A blackhole (blackpeak) must have a medium surrounding it with high density due to its large gravitational attraction. The large mass of a blackhole (blackpeak) also generates a large density gradient in the dense medium that it surrounds.

Although gravity cannot affect light directly, gravity can generate a density gradient in a medium, which affects the light. The only thing gravity can do is attract other objects of mass. Gravity generates a density gradient in a medium surrounding a gravitational object. A density gradient of a medium can change the speed of light, bend light, and shift the wavelength. However, a density gradient of a medium cannot shift the frequency of light. Frequency is the inverse of the time period and gravity cannot change the time period of a wave. Gravity cannot change the time, a year. Clocks cannot change the time, a year. Clocks only break down the time, a year, into smaller intervals, hour, minutes, and seconds. The reading on a clock does not determine the time, a year. We do not grow old by the clock. The time, a year, is not relative. The clocks we have engineered to break down the time, a year, into smaller intervals are relative. How fast or how slow a clock runs says nothing about how we age.

If a blackhole (blackpeak) has a large mass, it will be surrounded by a medium with a large density gradient. Since the density gradient is large near a blackhole (blackpeak), any light that is trying to propagate out of a blackhole (blackpeak) at an angle will be subjected to total internal reflection. Any light that propagates nearby will be refracted or bent towards the blackhole (blackpeak). As a result, it is the density gradient of the medium surrounding a blackhole (blackpeak) that makes a blackhole (blackpeak) black by preventing light from coming out due to total reflection and refraction.

If a blackhole (blackpeak) is in a vacuum, then it has no interaction with light, and hence, the blackhole (blackpeak) will no longer be black, and it will be a visible gravitational object of large mass density. On the other hand, no gravitational object can be surrounded by a vacuum since it attracts gas and dust clouds. There will always be a medium surrounding any gravitational object. The density of the medium surrounding a gravitational object depends on the mass of the gravitational object. In fact, blackholes (blackpeaks) are objects with large mass density. As a

result, the radius of a blackhole (blackpeak) is small and hence the gravity of a blackhole (blackpeak) will be large. A blackhole (blackpeak) with a large mass density naturally will have a high density gradient of the medium surrounding it that reflects outgoing light at an angle, and refracts or bends light propagating nearby towards the blackhole (blackpeak) making it invisible. The massive gravitational attraction of other nearby objects to an invisible point is an indication of the presence of an invisible blackhole (blackpeak).

It does not matter how massive the density of a blackhole (blackpeak), any light that is coming out radially will not undergo total reflection and hence will be able to come out of a blackhole (blackpeak). However, due to the large negative density gradient of the medium that surrounds the blackhole (blackpeak) along the path of light, radially outgoing light undergoes a significant frequency downshift making the frequency of light no longer in the visible range. So, a blackhole (blackpeak) cannot prevent radial waves radiating. It is that the large negative gradient of the medium that outgoing light is subjected to, redshifts or downshifts the wavelength of light below visible range. Blackholes (Blackpeaks) radiate waves in the below visible region.

Although the blackholes (blackpeaks) are invisible, they must be detectable in infrared, microwave, or radio frequencies since radially outgoing light from a blackhole (blackpeak) can come out with large redshift. You do not need quantum Mechanics to show that blackholes (blackpeaks) radiate. The ability of blackholes (blackpeaks) to radiate cannot be such a surprise since gravity has no direct effect on light and density gradient of the medium and the large mass density of a blackhole (blackpeak) cannot prevent the radially outgoing light from radiating. Gravity has no direct effect on light. Gravity can only affect light indirectly through a medium surrounding the gravitational object, creating a density gradient in the medium; there is no other means for gravity to affect light, the massless. It does not matter how massive the mass density of a blackhole (blackpeak), a blackhole (blackpeak) is visible if the blackhole (blackpeak) is in a vacuum.

There is nothing spooky about blackholes (blackpeaks). Blackholes (Blackpeaks) are just normal objects of large mass density. The large density gradient of the medium surrounding a blackhole (blackpeak) leads to:

1. A large redshift for radially outgoing light allowing a blackhole (blackpeak) to radiate below the visible region. There is nothing surprising about blackholes' abilities to radiate naturally.
2. Total internal reflection of non-radial light.
3. Blueshift and bending of light propagating nearby towards the blackhole (blackpeak).
4. Blueshift of radially incoming light with transmission and reflection at the boundary. Reflected

light will be below the visible region since it is subjected to a large redshift by the negative density gradient of the medium that surrounds the blackhole (blackpeak).

5. No blackhole (blackpeak) can prevent radial light coming out of it, or radial light radiation.

6. Any radial light that comes out of a blackhole (blackpeak) will be redshifted below the visible range, due to the large negative gradient of the medium, making them invisible.

7. Even though blackholes (blackpeaks) are invisible, blackholes (blackpeaks) will be detectable in the infrared or radio frequencies.

8. Blackholes (Blackpeaks) are objects with large mass density with finite mass and finite volume. There is nothing spooky about blackholes (blackpeaks).

9. Blackholes (Blackpeaks) are not some abstract spacetime discontinuities.

10. Blackholes (Blackpeaks) have nothing to do with General Relativity. General Relativity is not real; it only exists on paper.

There is no special reason for the large gravitational attraction of a blackhole (blackpeak) except that the mass is concentrated in a small volume. When a mass is concentrated into a small volume, another object can go quite closer to the center of the gravity of a blackhole (blackpeak) making gravitational force large since it is proportional to  $1/r^2$ . Since the radius  $r$  of an object of large mass density, a blackhole (blackpeak), is small,  $1/r^2$  will be large resulting in a large gravitational attraction to other objects of mass. So, it is the high mass density that gives a blackhole (blackpeak) the ability to exert a large force and interact with other masses since other objects can come closer to the center of mass of the blackhole (blackpeak) due to its smaller radius. Since objects can come closer to the center of the mass due to smaller radius  $r$ , and hence a drastic increase of  $1/r^2$ . And as a result, a large attractive force by a blackhole (blackpeak) on nearby objects.

It is the increased mass density, smaller volume, that gives a blackhole (blackpeak) the ability to exert an extraordinary gravitational attraction towards other nearby objects of mass, not just its large mass itself. However, it is a large mass that allows an object to collapse to a smaller volume with radius, and gain a large mass density, and become a blackhole (blackpeak). There is no hole in a blackhole (blackpeak). What is there in a blackhole (blackpeak) is a mountain, not a hole. The most suitable term to refer to a blackhole (blackpeak) would be "Black-mountain". Black-mountains are real. Black-mountains are objects of finite mass and finite volume. They are not some hypothetical abstract mathematical singularities. They have nothing to do with General Relativity or Special Relativity. There is nothing mysterious in Black-mountains. They do not bend light

in the absence of a medium. Black-mountains radiate below the visible region without the support of Quantum Mechanics.

Although objects of large mass densities that act as blackholes (blackpeaks) can exist, the claim that every galaxy has a blackhole (blackpeak) in its center is false. The claim that there is a blackhole (blackpeak) in every galaxy is false not because there isn't an invisible gravitational attraction at the center of every galaxy, but because this gravitational attraction point is not a real gravitational object at all. There is an invisible large gravitational attraction point at the center of every galaxy, and it has a name; it is the center of gravity of the galaxy.

The center of gravity of a galaxy is not a blackhole (blackpeak). What is at the center of every galaxy is not a blackhole (blackpeak), it is the center of gravity. When the center of gravity is not inside an object of mass, it appears as an invisible gravitational attraction point that can only be detectable from its interactions with other objects, just like a blackhole (blackpeak) even though the center of mass of a galaxy is not a blackhole (blackpeak).

Every orbiting system, a planetary orbiting system, a star orbiting system, a galactic orbiting system has an invisible gravitational attraction point at its center. In the case of our solar system, the center of mass happens to be inside the sun. If the center of the mass of the solar system had not been inside the sun, we would have mistakenly categorized it as a blackhole (blackpeak) even though there is no object present there physically.

The claim that not even electromagnetic waves (light) can escape a blackhole (blackpeak) is false, meaningless. Gravity cannot attract the massless. Radial electromagnetic waves are able to escape or radiate without refraction, but outgoing radial waves are subjected to a large wavelength down-shift due to the large negative density gradient of the medium along the outward direction. As a result, the outgoing waves will be below the visible wavelength. Frequency is never changed by a medium. Frequency is unaffected by gravity.

What is at the center of every galaxy is not a blackhole (blackpeak). There is nothing surprising about a blackhole's ability to radiate since radial electromagnetic waves can escape blackholes (blackpeaks) with no difficulty except the suffering of wavelength down-shift or redshift light waves have to endure. There is no hole in a blackhole (blackpeak), in fact it is the opposite. What is there in a blackhole (blackpeak) is a mountain, a mass density mountain.

*"It does not matter how big the mass density of a blackhole (blackpeak) is, no blackhole (blackpeak) can prevent radial light leaving a blackhole (blackpeak) although the radially leaving light is subjected to a large redshift or downshift of wavelength due to the large negative density gradient of the medium that outgoing light has to follow.*

*Radiation of blackholes (blackpeaks) is obviously natural. Nothing surprising. You do not need Quantum Mechanics to show that the blackholes (blackpeaks) radiate."*

*"The invisible gravitationally attractive point at the center of every galaxy is the center of mass of the galaxy, not a blackhole (blackpeak)."*

If space is warpable as General Relativity claims, then, the amount of warp in space will be determined by the volume of an object, not by the mass of an object, and as a result, gravity will be determined by the volume of an object in General Relativity as well as in any other gravitational hole-theory. In gravitational hole-theories such as General Relativity, an object does not fall directly onto the gravitational object as an object naturally falls when we drop an object onto earth; it will follow a curved path without ever hitting the earth directly since it is expected the falling object to follow the space curvature. A mass cannot exert a force on massless light and space. A single mass has no force; only the interaction of masses generates a force. A mass cannot warp space since a mass cannot exert a force on massless space. Mass warps a material medium. Larger the mass density of the object of mass, steeper the warp of the material medium. If the space is warpable, the larger the volume of the object, the steeper the warp, which contradicts General Relativity. Space is not warpable. General Relativity is hypothetical and invalid since light is not relative and does not behave as golf balls as General Relativity falsely assumes.

#### **XVI. LIGHT DOES NOT HAVE TO ZIP MUTUALLY INDEPENDENT SPACE AND TIME INTO A HYPOTHETICAL UNION OF SPACETIME TO PROPAGATE AT CONSTANT SPEED**

Theorem:

*Light is not relative, and does not behave as golf balls [6]. The Special Relativity, which is based on the false assumption that light is relative and behaves as golf balls, is both theoretically and conceptually invalid.*

Light does not bring space and time into a union. Speed of light is a constant does not mean distance to time ratio is a constant. The light travels at constant speed  $c$  means just that, light travels a constant distance  $c$  units for every time unit it travels. Light travels at constant speed  $c$  does not mean that its units have to be constant. The units of speed of light, (meters/second) or (distance)/(time) in general are not constant. Light can travel at constant speed  $c$  without bringing mutually independent space and time into a single entity called hypothetical spacetime. For light to travel at constant speed  $c$ , light does not have to zip up the space and time,

$$(\text{meters}) \neq c(\text{time}) \quad (16.1)$$

$$(\text{distance}) \neq c(\text{time}) \quad (16.2)$$

If light travels at constant speed, what is true is,

(Distance light travels)= $c$ (time taken for the travel)  
(16.3)

If we write  $c=x/t$ ,  $x$  is the distance light travels and  $t$  is the time taken for light to travel the distance  $x$ ;  $(x,t)$  is not any  $x$  in space at any time  $t$ . Space and time are mutually independent. Propagation of light at constant speed does not bring mutually independent space and time into a hypothetical union of spacetime. For light to travel at speed  $c$  in space, time on a moving object does not have to be altered relative to an outside observer.

Lemma:

*Light propagating at the constant speed of light  $c$  does not zip up mutually independent space and time into a hypothetical union of spacetime.*

When we say that the gravitational parameter  $G$  is a constant, it is  $G$ , the quantity, that is a constant, not its units, (distance)<sup>3</sup>/(mass)(time<sup>2</sup>). For the quantity  $G$  to be a constant, its units, (distance)<sup>3</sup>/(mass)(time<sup>2</sup>), do not have to be zip up by a constant,

$$(\text{distance})^3 \neq G(\text{mass})(\text{time}^2) \quad (16.4)$$

*"A constant speed of light,  $c$ , cannot bind its units, (meter)/(second) or (distance)/(time) in general, by the constant  $c$ ."*

*"If a parameter is a constant, it is the value of the parameter that is constant, not the units of the parameter."*

Einstein uses a beam of light as the absolute frame in the Special Relativity. It is the use of a beam of light as absolute frame in Special Relativity that gives a rest mass  $m$  the relative rest energy  $E=mc^2$  in Special Relativity. This rest energy of a mass is an imaginary quantity since mass has no actual speed  $c$ . Light is not relative and hence no stationary object of mass has a speed  $c$  and hence a rest mass has no rest energy,  $E \neq mc^2$ .

## XVII. CONCLUSIONS

Nobody gets old by the clock. We define the time in earth years. Earth year is not defined by clocks. Everybody gets old in earth years. The wait we have to endure to see the earth passing the same point over on its orbit is defined as the time, a year. How we break down the time, a year, into smaller subunits or intervals is up to us. The orbit of a planet is independent of the observer's frame of reference. The speed of the planet on its fixed orbit is independent of observers. Observers cannot deorbit a planet. The motion of an entity on its fixed path is independent of the observer's frame of reference.

Time is a definition. Time does not exist until we define it. An earth year is defined as one complete orbit of the earth. The earth year is independent of clocks. The earth year exists without clocks. Martian may define the year in Martian years. The conversion of the Earth year to Martian year, and vice versa, is observer independent. Whether the year is defined as

earth year or Martian year, the time, a year, is independent of clocks. Clocks have no existence until we engineer them. How fast or how slow a clock is moving has no effect on the time, a year. The laws of nature are not determined by the clocks we engineer. The laws of nature are there even if we haven't engineered clocks. The laws of nature are there even if we have been extinct. Laws of nature are not observer dependent. Our clocks are just door stoppers for a caveman, monkey, or for an alien. The time, an earth year, is the same; it is independent of where or what speed you are traveling at.

Clocks are engineered devices to break down the time, a year, into smaller intervals, hour, minutes, and seconds. The year is unaffected by the reading on the clock. The time, an earth year, is unaffected by the speed of clocks. Whether you are on a spaceship traveling at the speed of light  $c$  or on earth at stand still, your age in earth years will be the same. The time, a year, which is one complete orbit of the earth, is unaffected by the observer's frame of reference. How old an observer is unaffected by the speed of the observer since the time, a year, is unaffected by the speed of the observer. The time, a year, is not relative. The display of a clock is relative. The display of a clock does not determine the time, a year.

A clock has the correct speed only if the reading on the clock fits into a one orbit of the earth. One orbit of the earth is independent of observers, independent of the speed of the clocks.

*"The time, a year, is not determined by clocks. The subintervals, hours, minutes, and seconds on clocks are determined by the time, a year."*

*"It is not just the speed of light that is observer independent, the direction of light is also observer independent. It is the velocity of light that is observer independent. The velocity of light can only be altered by the change of the medium. Observers cannot bend light. Gravity cannot bend the light. Light does not behave like golf balls."*

*"Gravity cannot bend light."*

*"Observers cannot bend light"*

*"Observers cannot derail a train;*

*"Einstein derailed the train in Special Relativity."*

*"Light cannot propagate on a curved path (geodesic) at constant speed. Light does not propagate on geodesics. Light can travel in any direction. The paths of light are not limited to geodesics."*

In Maxwell equations, it is not just the speed of light that is a constant in the vacuum and affected by a medium, the direction of light is also a constant in the vacuum and affected by a medium. It is the velocity of light that is a constant in Maxwell equations. Maxwell equations cannot be observer dependent since the velocity of light is a constant that can only be altered by the change of the medium.

The  $x$ ,  $y$ , and  $z$  axes in Maxwell equations refer to a stationary frame in the vacuum. Maxwell equations cannot be transformed to an inertial frame. Lorentz could only partially transform Maxwell equations onto an inertial frame, because his transformation without the multiplication factor had a second order term that he could not get rid of to maintain the form of the Maxwell equations. Although Einstein managed to transform Maxwell equations onto an inertial frame using a multiplication factor, the transformation is not unique, and the transformation does not work on linear forward time given by clocks. Einstein's transformation of the Maxwell equations is limited to the average return time of a beam of light, which is not given by clocks; this is due to the use of the transformation factor  $\gamma$  based on the average return time of a beam of light.

Light is not relative. In Einstein's moving cabin thought experiment where Special Relativity started with, the path of light burst is incorrect. Light does not behave like a golf ball in a moving train. Once a light burst is released from a source, the light burst is not anchored to the source, and light has no momentum. A vertical light pulse from the bottom of a horizontally moving train does not take a vertical path relative to an observer inside the train. External observers cannot derail light. Einstein derailed light in both Special Relativity and in General Relativity. Special Relativity and General Relativity are incorrect. Both Special Relativity and General Relativity suffer from the same genetic defect, the false assumption that the light is relative.

*"You cannot vilify Special Relativity and glorify General Relativity. Both Special Relativity and General Relativity have the same genetic defect. They are both based on the unproven assumption that light is relative, and behaves as golf balls."*

Every gravitational object is surrounded by a medium. Gravitational object generates a density gradient in the medium. The density gradient decreases with the distance from the object. Frequency of light is unaffected by the change of the medium or by the density gradient of the medium. When light encounters a change of medium or density gradient of the medium, the speed of light changes, and as a result the wavelength will be shifted since the frequency is unaffected by a medium.

When light is propagating along a decreasing density gradient, the speed of light increases. Since the frequency is unchanged by the change of medium, the increase in the speed of light with the decreasing density of the medium leads to an increase in the wavelength, a redshift. When light propagates along a path of a negative density gradient of the medium, the wavelength is redshifted.

Similarly, when light is propagating along a path of a positive density gradient of the medium, the speed of light decreases. Since the frequency is unchanged by the change of a medium, the decrease of the speed of light with the positive density gradient of the

medium results in a decrease of the wavelength, a blueshift. When light propagates along a positive density gradient of the medium, the wavelength is blueshifted.

The outgoing Light from a star is propagating in a decreasing medium density or negative density gradient of the medium. When light propagates in a medium of negative density gradient, the speed of light increases and as a result the wavelength will be redshifted since the frequency is unaltered by a change of the medium. When light propagates towards a star from outside, the light is propagating in a positive density gradient of the medium. When light is propagating in the direction of the positive density gradient of the medium, the speed of light decreases, and as a result wavelength decreases, a blueshift, since the frequency is unaltered with the change of medium.

Larger the mass of the gravitational object, higher the density gradient of the medium and hence larger the wavelength shift. This explains the observation of the Pound-Rebka experiment. The Pound-Rebka experiment would not have given any wavelength shift if the Pound-Rebka experiment had been carried out in a vacuum tube. They should have carried out this experiment easily in a vacuum tube since it had been done from a 4-story building. Pound and Rebka might have realized that there is no incentive for doing the experiment in a vacuum since such a result is an anathema to Einstein's false claim in General Relativity that gravity affects time. Gravity does not affect the time. Gravity cannot alter frequency. It is always the wavelength that is redshift shifted or blueshifted, never the frequency.

*"The redshift/blueshift of the wavelength of light near a gravitational object is due to the density gradient of the medium. There will be no redshift/blueshift of light near a gravitational object in the vacuum."*

*"Gravity does not bend light. It is the density gradient of the medium that bends light. There is no bending of light near a gravitational object in the vacuum."*

*"Time and Frequency are unaffected by gravity and the change of the medium."*

Pound-Rebka is a good example of experimental misinterpretation. The Pound-Rebka experiment has been carried out with the direct intention of validating General Relativity. Experiments can be designed and the results can be misinterpreted to make false claims and justify false theories. That is exactly what has happened in the Pound-Rebka experiment as well as in Arthur Eddington's misinterpretation of the eclipse observations in validating General Relativity. In both cases, they overlooked the density gradient of the medium; the intentions overruled the obvious facts.

Modern Physics is no stranger to such experiential misinterpretations and reality-hiding manufactured

experiments for validating false claims. Double-slit experiment with a beam of electrons for justifying the strange concept of particle waves, and the Stern-Gerlach experiment for giving a spin of a particle bizarre 2-dimensional state are some obvious examples for experimental misinterpretations in Modern Physics [3]. Particles cannot behave as waves. Spin cannot have a 2-dimensional state. Spin is a vector. Vectors cannot be quantized.

Gravity has no effect on the time, a year. Gravity has no effect on frequency of light. Gravity has no effect on light in a vacuum. Gravity has no effect on the massless. It is only in the presence of a medium that gravity has a secondary effect on the speed of light and hence on the wavelength. Gravity has no effect on frequency irrespective of whether a medium is present or not.

The Doppler effect only applies for short distances where the medium can be assumed to be homogeneous. The Doppler effect does not apply for light propagation in an inhomogeneous medium. Light from stars in galaxies travels in an inhomogeneous medium and hence the redshift of light from stars cannot be attributed to the Doppler effect. Star redshift is real. The Doppler effect is not real. Star redshift cannot be attributed to a galactic redshift since all the stars in a galaxy do not have the same redshift.

*“The source/observer motion cannot change the actual frequency and the wavelength of a wave.”*

*“The Doppler effect is for the observer’s eyes and ears only.”*

Redshift of a star in a galaxy cannot be attributed to a radial speed of a star relative to earth since the Doppler effect cannot be applied to light propagating in an inhomogeneous medium. The redshift of a star in a galaxy cannot be attributed to the redshift of a galaxy. Neither the redshift of a star nor the redshift of a galaxy can be attributed to an expansion of the universe. Space cannot expand.

Even if one makes the false assumption that space can expand, the expansion of space cannot change intergalactic distances between the gravitationally bound objects or galaxies. Expanding universe cannot change the wavelength of light since the propagating light is not anchored to space. Expanding universe has no effect on frequency. An entity that is anchored to another entity cannot propagate. Propagating entity must be free of any anchorage.

Light is not anchored to a medium. Light is not anchored to space. Gravitational objects, galaxies, stars, planets are not anchored to space. Expanding universe cannot alter anything, neither the distances between objects of mass nor the distances between clusters of objects of mass. Expanding space cannot change light. Expanding space has no effect on light.

If the universe is expanding, the speed of light cannot remain constant since the speed of light is determined by the Coulomb and Ampere constants of

the vacuum. If the vacuum is dynamic, the speed of light in the vacuum does not remain constant. Light cannot follow the so-called curvature of the space at constant speed. If space has a curvature, the space cannot be a vacuum.

*“Expanding space cannot change the distances between gravitationally bound objects. Expanding universe cannot change the speed, frequency, and wavelength of light. Expanding space cannot change anything.”*

A single mass has no gravity. A single mass does not have a force. A single mass cannot exert a force on massless space and on light. A mass cannot create a hole in space. A mass cannot warp the space. The claim in General Relativity that a mass warps the space and the amount of warp is determined by the mass is false.

If the space is warpable and the mass  $m$  of an object warps the space, the amount of warp must be determined by the volume  $V$  of the object, not by the mass  $m$  of the object. And as a result, in General Relativity, the space warp must be proportional to the volume  $V$  of an object, not to the mass  $m$  of an object. The gravity in General Relativity must be given by the volume  $V$  of an object, not by the mass  $m$  of an object. Newton gravity is determined by the mass  $m$  of an object with the interaction of another mass. As a result, the claim that General Relativity is equivalent to Newton relativity when the speed is much less than the speed of light  $c$  cannot hold true.

A single mass cannot generate a warp on a trampoline. It is not even possible to place a mass on a trampoline. A mass cannot generate a dent in a trampoline. The use of a picturesque curvature obtained by the placement of a ball on a trampoline on earth to demonstrate General Relativity is deceiving. You cannot put a mass on a trampoline in space. If you bring a mass near a trampoline, what you get is a bump, not a dent. A mass can generate neither a bump nor a dent on a trampoline of nearly zero mass. A mass has no effect on the massless. It is only the interaction of two masses that generate a force. Gravity is the interaction between masses.

A single mass has no energy. A single mass has no gravity. A single mass cannot exert a force on nothing, the massless. A single mass has no gravitational potential. There is no gravitational potential unless a unit mass is placed in a point. A gravitational object of mass cannot distinguish a unit mass from any other mass. A single mass does not fall. A single mass does not move. A mass does not have speed  $c$  relative to light. A mass does not have a rest kinetic energy. A mass does not have energy,  $E=mc^2$  unless the mass is moving from the start at speed  $c$ , or moving from standstill at an acceleration to speed  $\sqrt{2}c$ .

There is nothing preventing a mass from traveling beyond the speed of light  $c$ . No mass can travel at constant speed from the start. It is only if the light is

relative, a rest mass has the kinetic energy  $E=mc^2$  relative to the propagation of light. However, light is not relative and hence a rest mass has no motion relative to the propagation of light,  $E \neq mc^2$ . A rest mass has no kinetic energy and hence Einstein's  $E=mc^2$  is false. A mass cannot be converted to energy since energy has no existence without mass. Mass in a closed system is conserved.

A mass cannot create a dent on a trampoline. It is the interaction between masses that generates energy. Gravity is a result of the interaction between two masses. Gravitational potential is an interaction between two masses. A single mass has no force. A mass cannot exert a force on space. A mass cannot bend space. It is the volume of an object that occupies the space. If space is warpable, it must be the volume of an object that warps space, not the mass of an object. The mass of an object can warp or generate a density curvature in a material medium that it surrounds. The density warp of a material medium can change the speed of light, bend the light, and shift the wavelength, but it cannot shift frequency. Neither a change of the medium nor gravity can shift frequency. Neither a change of the medium nor gravity can alter the time, a year.

*“Gravity cannot change the speed of light in a vacuum. Gravity cannot shift the wavelength of light in a vacuum. Gravity cannot bend the light in a vacuum. Gravity cannot alter the frequency of a light neither in a vacuum nor in a medium.”*

*“If the space is warpable, the volume of an object warps the space while the mass of an object warps the medium surrounding the object. Space is not warpable. Only the matter is warpable.”*

Special Relativity and General Relativity do not run on the ordinary time given by clocks. Special Relativity and General Relativity run on a specially defined time; they run on the average return time of a beam of light. What holds true for the average return time of a beam of light does not hold true for one way time of a clock. Average return time of a beam of light is not given by clocks. Average return time of a light beam cannot be obtained in real time. Special Relativity and General Relativity do not run on real time and hence cannot be realtime mechanisms of nature; nature does not have a mechanism to calculate the average return time of a beam of light. Average return time of a beam of light can only be obtained for the past, no such thing exists for the present. If time is relative as in Special Relativity and General Relativity, the time will be directional. Time cannot be directional.

Gravity affects neither the speed of light nor the direction of light in a vacuum. Light is insensitive to gravity and vice versa. Gravity has no effect on time. Light does not propagate on the geodesic. Light has no mechanism to detect geodesics. Light does not propagate on geodesics. Light cannot take a curved path at constant speed. The path of light must be linear if the speed of light is constant. The velocity of light can only be altered by a medium. A mass warps

the medium it surrounds, and the warping of a medium bends the light. Warping of the medium by a mass shifts the wavelength. A single mass has no gravity. A mass has no direct effect on light, the massless.

If the universe is expanding as some physicists claim, then, the speed of light in a vacuum space cannot be a constant since the Coulomb constant and the Ampere constant of the vacuum that determine the speed of light in a vacuum must change if the vacuum has dynamic characteristics. If the space is expanding as some suggest, as the space expands, the speed of light must increase as the space expands. If one wants to experimentally verify if the universe is expanding, then, one should be able to show that the speed of light in a vacuum is increasing, and any such futile effort will demonstrate the fallacy of the concept of expanding universe. Space cannot expand.

Increasing redshift of light from a star in a galaxy cannot be attributed to a space expansion. Star redshift is not a Doppler effect. Expanding space cannot alter the distance between gravitationally bound objects such as galaxies.

*“If the space is expanding, the speed of light must be increasing since the Coulomb and Ampere parameters that determine the speed of light cannot remain constant in a dynamic vacuum space.”*

Light has no way to detect the presence of a mass, a gravitational object in a vacuum, unless light hits the mass. When light hits a mass, it is a change of medium for light, and hence the direction is changed. The path of light is unaffected by the presence of a mass, a gravitational object, in a vacuum. Gravity cannot bend light in a vacuum. It is the change of a medium or the density gradient of a medium that bends light. Observers cannot bend light. The path of light cannot be altered by observer motion.

Special Relativity and General Relativity derailed light, which is prohibited by Maxwell equations as well as by Lorentz transform since it is not just the speed of light that is a constant, the path of light is a constant too in Maxwell equations as well as in Lorentz transform.

Lorentz transform cannot exist since Lorentz transform is not unique. The time, a year, is not relative. The time, a day, is not relative. Clocks do not determine the time, a year. Clocks do not determine a day; clocks are engineered to break down a day into smaller intervals. The time, a day, is not relative. The time, a year, is not relative. We do not get old by the clocks, the devices we engineer. The Lorentz Transform cannot exist when time is not relative.

The Lorentz transform is hypothetical. Even the hypothetical existence of the Lorentz transform is not possible since time is not relative and the Lorentz transform is not unique [6]. If time is relative, time will

be directional. If time is relative, time will not be unique. Time must be unique and non-directional.

Spacetime in physics is not what we generally mean by spacetime. In general, space is what we occupy, it is real. In general, time is what we get on a clock. A clock is correct if 24 hours on it fits one revolution of the earth on its axis. So, in general spacetime means space and time, two mutually independent entities. However, in physics, spacetime is the spacetime function in the Lorentz-Einstein transform; this function is not unique since the Lorentz-Einstein transform is not unique. When we say there is no spacetime, we are claiming that there is no spacetime function. Space and time are mutually independent.

Time cannot be relative. If time is relative, time will be directional. Time cannot be directional. If time is relative, relative time will not be unique. Spacetime function cannot exist since it is not unique. Light cannot be transformed onto moving frames. Light propagates in space, in the vacuum. The speed of light is determined by the vacuum and the direction of light is a constant in the vacuum. Both the speed and the direction of light can only be altered by a medium. Observer motion cannot change the speed of light or the direction of motion of the light. Observers cannot derail trains. The speed and the direction of a train on its fixed track are independent of observer motion.

*“The velocity of light is not relative. The velocity of light is independent of the observer’s speed. It is not just the speed of light that is observer independent, the direction of light and the path of light are also observer independent. Light traveling at constant speed on a constant path is naturally independent of observers. No Special Relativity is required. [4]”*

Blackholes (Blackpeaks) are objects of large mass densities. The mass density of an object can increase if the radius of the object decreases and as a result a blackhole (blackpeak) has a higher surface gravity due to the smaller radius. The mass density of an object can also increase with the increase of mass resulting in a reduction of the radius leading to increased surface gravity. There is no hole in a blackhole (blackpeak). What a blackhole (blackpeak) has is a high mass density gradient mountain, not a hole.

If the space is warpable, the amount of warp is determined by the volume of an object, not the mass of an object. Amount of warp by an object of mass  $m$  and volume  $v$  cannot be the same as the amount of warp by an object of the same mass  $m$  but a bigger volume  $V$ . If the space is warpable as General Relativity suggests, the mass of an object cannot be the determining factor in the warp of space.

In General Relativity it should be the volume of an object that determines the gravity, not the mass of an object, even though it claims that the mass of an object warps space. If space is warpable, it must be the volume of an object that warps space. What is

warped by the mass of an object must be the medium surrounding a mass. Space is not warpable. If the space is warpable, the speed of light in a warped space can no longer be a constant. Only a material medium is warpable. A mass warps the material medium surrounding a mass generating a density gradient and it is real. Hypothetical space warp in General Relativity must be proportional to the volume of an object of mass, and hence the General Relativity cannot reduce to Newton gravity.

Gravity cannot bend light. It is only a medium that can affect light. Gravity can generate a density gradient in the medium, which will change the speed of light, bend the light, and shift the wavelength of light. There is no refraction and a wavelength shift of light near a gravitational object in the absence of a medium or in a vacuum. Observers cannot bend light by running away from it. Observers cannot derail a train by running away. Light propagates at constant speed determined by the vacuum and affected by the medium.

The direction of a burst of light is initially determined by the source and propagates on a fixed track in the vacuum. The speed of light and the path of light in the vacuum can only be altered by a medium. Observers cannot derail light. Observers cannot alter the path of light. Observers cannot alter the speed of light on its fixed path. Einstein derailed light relative to observers in his “vertical light beam in a horizontally moving train” thought experiment, where Special Relativity started. Special Relativity and General Relativity are incorrect since light is not relative. Light does not behave as golf balls.

The time, a year, is defined as one complete orbit of the earth. The time, a year, is not determined by clocks. The time, a year, is unaffected by the speed of clocks. We engineer clocks to break down the time, a year, into small intervals, hour, minutes, and seconds. The time, a year, it takes the earth to orbit the sun is independent of the speed of an observer or the mass of the earth, the gravity.

The time, a year, it takes the earth to orbit the sun is independent of the observer irrespective of whether the observer is moving at constant speed or at an accelerated speed. It is the orbit as a whole that shifts against the motion of an external observer, not the earth itself. The time, a year, is not relative. It is the train track that shifts relative to observers, not the train itself. The direction and the speed of a moving object on its fixed path is not relative. It is the fixed path of the moving object that shifts relative to the motion of observers. A moving entity on its fixed path, irrespective of whether it is a wave (massless) or an object of mass, is not relative, and cannot be relative. It is always the fixed path (the train track) that is relative.

Clocks have nothing to do with the time, a year or the time, a day. The display on a clock cannot change the time, a year or the time, a day. The gravity on earth does not change the time, a year. An

engineered device operates correctly only when the device is used according to the design specifications. No engineered device gives the correct result outside the design specifications. It is not the time itself that is relative. It is the clocks that are relative. Time itself is independent of gravity. It is the clocks that depend on gravity due to the gravitational force on them.

A mass itself has no gravitational force. A mass has no gravity. Gravity is a result of the mutual interaction between masses. In order to have mutual interaction between masses, a mass must know the existence of other masses without a delay, instantly. This knowledge cannot be a result of a shakehand since shakehand requires a communication that results in a delay. Orbiting system cannot exist under delayed communication. Gravity cannot be a result of a shakehand by hypothetical gravitons. Gravitons cannot exist since a disturbance cannot be created in a single field. Nothing can come in quanta unless the quantum has a natural mechanism to carry belonging information.

How does a mass know the existence of another mass to exert a force is an unanswered question. A mass itself has no gravitational potential. Gravitational potential is a result of a mass interacting with a unit mass; we define it as the work done to bring a unit mass to a point from infinity. Since an external agent does not have to do any work here, it is the relative potential that is negative. There is no negative potential energy density surrounding a gravitational object. Energy cannot be negative. Potential energy exists between masses. Space has no potential energy. Space has no energy. Particles of mass have energy and energy potential. Light has energy potential, but no energy.

A unit mass is a human definition. Nature has no clue what unit mass is. Without a mechanism for a mass to know what a unit mass is, a mass cannot have a gravitational field or a potential. A single mass does not have a gravitational field, gravitational force, or gravitational potential. The gravitational force, gravitational field, gravitational potential are a result of interaction of masses. How does a mass know the existence of another mass at a point in space to generate a gravitational force is an unanswered question. How does a mass know that the other mass is a unit mass? Unit mass is our definition. We define a unit mass to facilitate our mathematical explanation. A mass does not know whether another mass is a unit mass or not. If there are two or more masses, there is a gravitational interaction between them.

If a mass warp space as General Relativity suggests, the motion of a mass generates the change warp, and the change of warp generates a resistance to the motion of the mass, which results in the collapse of orbiting systems. Gravity cannot be a result of the warping of space by the mass of an object as General Relativity proclaims.

There is no gravitational field at a point in space surrounding an object of mass unless a unit mass is

placed at that point. The work a mass can do in the presence of another mass is positive. There is no gravitational field surrounding an object of mass. A gravitational field cannot exist at a point without the presence of a (unit) mass at that point. There is no gravity or gravitational potential without the interaction of two masses. A single mass has no gravity.

The time, a year, is independent of clocks, independent of observers, independent of the mass of the earth, the gravity the observer or the clock is subjected to. Clocks do not determine the day or the year. Clocks break down the day or the year. The Doppler effect is not real.

The Doppler effect exists only for the observer or the detector. The Doppler effect cannot alter the actual properties of a propagating wave. The Doppler effect requires a homogeneous medium. The Doppler effect cannot be used in a nonhomogeneous medium. The Doppler effect is observer dependent. The Doppler effect is not real, and the Doppler frequency shift and wavelength shift are not present in the wave itself. The Doppler effect is purely an observer phenomenon.

The Doppler effect cannot generate a real frequency shift and wavelength shift in the wave itself. Even in the eyes of an observer/detector, the Doppler effect cannot shift just the frequency alone or the wavelength alone. The change of the frequency in the eyes of an observer is an indication that the Doppler effect is not real:

1. The source/observer motion cannot change the frequency of a light wave.
2. Gravity cannot change the frequency of a light wave.
3. The change of the medium cannot change the frequency of a light wave.
4. The Doppler effect cannot change the speed of light.
5. The change of frequency in the Doppler effect is a clear indication that the Doppler effect does not exist beyond the observer's eyes and ears.

The redshift observed cannot be attributed to a Doppler effect unless the medium is homogeneous. The light from stars travels large distances in an inhomogeneous medium and hence the star redshift cannot be attributed to the Doppler effect.

The redshift of light from a star in a galaxy cannot be attributed to the radial motion of galaxies since all the stars in a galaxy do not have the same redshift. An expanding universe or expanding space cannot change the mutual distances between the galaxies since the galaxies themselves are gravitationally bound orbiting systems. Expanding space cannot alter the distances between gravitationally bound objects since objects are not anchored to space. Objects are gravitationally anchored to each other, not to space. Expanding space cannot change the wavelength of

light since light is not anchored to space. An entity that is anchored to space cannot propagate. Light cannot propagate if light had been anchored to space.

Space cannot expand. Space has no temperature. Space has no energy. There is no energy without matter. Light has no energy. Light has no temperature. The electromagnetic potential of light is not energy unless it is converted to energy in the presence of electrons or charge particles. There is no massless energy. There is no independent entity called energy. The energy exists in association with masses, as kinetic energy. Energy is the kinetic energy of masses. Mass cannot be converted into energy since energy has no independent existence without masses. Mass in a closed system must be conserved.

A mass generates a density gradient in the medium that it surrounds. This density gradient changes the speed of light and bends light. The frequency is unaffected by the change in density of the medium. As a result, the change in density generates a wavelength shift. The speed of light decreases with the increasing density of the medium. The speed of light increases with the decreasing density of the medium.

A mass generates an increasing density of the medium when the distance from the mass decreases, and a decreasing density when the distance from the mass increases. When the light travels towards a mass, it is traveling in a positive density gradient of the medium, which results in a blueshift. When light travels outwards from a mass, it travels in the negative density gradient of the medium, which results in a redshift. This redshift/blueshift is always a wavelength shift, never a frequency shift. Frequency is unaltered.

Gravitational object generates a density gradient in a medium, and this density gradient shifts the speed of light, which results in a wavelength shift. The frequency of light is unaltered. Gravity has no effect on light in the absence of a medium. The redshift and blueshift observed in the Pound-Rebka experiment is not a result of gravity affecting light. Gravity cannot affect light in a vacuum. The effect of gravity on light is always through a medium, not a direct effect. Gravity has no effect on frequency even in the presence of a medium.

There would not have been a redshift or blueshift if the Pound-Rebka experiment had been done in a vacuum. Pound and Rebka made the same mistake Arthur Eddington made with the eclipse data. They misinterpreted observations. Gravity has no effect on light, the massless. Gravity cannot bend light. Gravity cannot shift the frequency. Gravity cannot change the time, a year.

Gravity can have an effect on a clock since a clock is another chunk of mass, which in turn affects the mechanism of the clock, and hence the display of the clock. The display on a clock does not alter the time, a

year. In addition to the effect of gravity on a clock as another chunk of mass that alters the mechanism of the clock and hence the reading on the clock, the gravity can also affect the reading on a clock in the presence of a medium if the mechanism of the clock is based on the traveltime of a beam of light.

Special Relativity and General Relativity do not run on real oneway time given by clocks. They run on average return time of a light beam. Average return time of a light beam must be calculated and it is not given by clocks. Clocks display oneway time. Special Relativity and General Relativity are incompatible with clocks. Ordinary clocks have no place in Special Relativity and General Relativity.

Light is not relative and hence light does not behave as golf balls; Einstein forced the light to be what light is not. Light is not particles. Light cannot come in quanta or photons. If light comes in quanta, light quantum or photon will be in limbo at a boundary. At a semi-transparent boundary, light must be divided into reflected and transmitted parts. Since a quantum cannot be further divided, this is not possible. Light cannot decide whether to cross a boundary or not by tossing a coin. Particles are not waves. Waves are not particles. Light bursts generated by atoms are not particles, they are waves. Energy cannot be quantized. If energy is quantized, a spectrum cannot be continuous. If energy is quantized, the energy of even a narrowest band of a wave will be infinite.

*“There cannot be a quantum without a mechanism to carry belonging information.”*

Light is not relative. Light does not behave like golf balls. Neither the Observers nor gravity can change the time, a year. Galactic redshift cannot be attributed to an expanding universe. Universe cannot expand. Space cannot expand or contract. Empty space has no temperature. Only the matter expands or contracts. There is no temperature without the collision of matter. There is no energy without the collision of matter. There is no massless energy. Mass cannot be converted to energy since energy has no independent existence. Mass is conserved in a closed system.

The Doppler effect is for the observer's eyes only, not real. The concept of expanding universe contradicts the presence of galactic blueshift. Expanding universe cannot generate both blueshift and redshift. The redshift from different stars from the same galaxy cannot be the same. The redshift of a star from a galaxy cannot be attributed to the Doppler effect, and the Doppler effect cannot be attributed to the radial motion of galaxies. Universe is not expanding. Universe cannot expand. Space cannot expand. Only a medium can expand.

The fallacy of Modern Physics is that it is based on the wrong premise that light is relative and comes in particles or photons. Gravity has no direct effect on light in the absence of a medium. Light is not relative. Time is not relative. Mass of an object is not relative,  $m \neq \gamma m$ ,  $m' = m$ . The dependence of the mass of an

object on speed is unimaginable and false. Mass in a closed system is conserved. Mass cannot be converted to energy since energy has no independent existence without mass.

Gravity cannot bend light in a vacuum. Gravity cannot shift the wavelength in a vacuum. Gravity cannot shift frequency. Gravity cannot change the speed of light and the direction of light in a vacuum. The motion of the source or/and observer cannot change the speed, frequency, and wavelength of light.

Particles are not waves. Waves are not particles. Space cannot expand or contract. Spin cannot be quantized. Spin state cannot be two dimensional. The fate of a photon at a boundary cannot be determined by probability. Light cannot be particles or photons. Light comes in wave bursts; these wave bursts are not particles.

*“A photon's inability to determine what to do at a boundary is an indication that light cannot come in quanta. Probability cannot determine the fate of a photon at a boundary. Nature does not run on probability. Probability is a human concoction, not a mechanism of nature. Nothing in nature is random.”*

The increasing redshift is due to the increase of the medium density surrounding the stars. Universe is not accelerating. Space cannot expand or accelerate. A force cannot act on space. In the absence of matter, space itself has no energy. If the galactic redshift is found to be increasing, it must be a result of increasing density of the medium that the stars surround, which is both possible and expected. Increasing redshift cannot be attributed to an accelerating universe because expanding space cannot change the distances between gravitationally bound objects or object clusters, and the redshift of a star in a galaxy cannot be attributed to the galaxy since all the stars in the galaxy do not have the same redshift. The Doppler shift is for the observer's eyes only, not real.

*“Any real change cannot be observer dependent.”*

Blackholes (Blackpeaks) cannot prevent radial light from a blackhole (blackpeak) radiating, even though radial light undergoes a significant redshift causing the radial light from a blackhole (blackpeak) to radiate below the visible region. Blackholes (Blackpeaks) can radiate without the help from Quantum Mechanics. Quantum Mechanics is not even a theory since energy cannot be quantized [2].

It does not matter how large the gravity is, gravity has no direct effect on light in a vacuum. It does not matter how large the gravitational object is, gravity cannot attract light or prevent light propagating. The only thing gravity can do is generate a density gradient in the medium that it surrounds. The only thing that can change the light is the change of a medium. It is the medium that mediates an interaction between gravity and light. The effect of gravity on light is always through a medium.

*“It is the medium that mediates an interaction between gravity and light.”*

There is not a single wave that can propagate. A single wave cannot propagate. Propagation requires two conjugate partners. Gravity has no conjugate partner, and hence gravity is not a wave. Gravity cannot propagate.

*“Propagation requires a conjugate pair.”*

A single field cannot be disturbed. A disturbance requires a conjugate pair. Gravitational field cannot be disturbed since it has no conjugate partner. As a result, there are no gravitons. The Higgs field has no conjugate partner. The Higgs field cannot propagate since it has no conjugate partner. The Higgs field cannot be disturbed since it has no conjugate partner. As a result, there are no Higgs bosons. A single field cannot exist without a source. The Higgs field itself has no existence since the Higgs field is sourceless.

*“One cannot tango. It requires two to tango. A single field cannot propagate. A single field cannot be disturbed. There are no gravitational waves. There are no Higgs waves. The Higgs field itself cannot even exist. There are no gravitons. There are no Higgs bosons.”*

We cannot claim gravity bends light by observing the refraction of light in the medium surrounding the sun. If the sun is in a vacuum, there will be no refraction of light near the sun. Heavier the object the denser the medium and stronger the density gradient surrounding it, and the effect of the density gradient on the propagation of light is significant. Strong density and density gradient of the medium surrounding the sun due to the large mass of the sun is the cause of the bending of light near the sun.

Observers cannot bend light. Gravity cannot bend light. Gravity cannot alter the frequency of a wave. Observer/Source motion cannot alter the properties of light. Arthur Ellington misinterpreted the eclipse observation to justify General Relativity. If he had taken the strong density gradient of the medium surrounding the sun into account in analyzing the eclipse observation, General Relativity with many false assumptions and unexplainable hypothetical space warping would not even be considered a theory. Warping of space by a mass is meaningless since mass cannot exert a force on the massless space, space cannot react to a force, and it is the volume that occupies the space not the mass.

Bending of light near the sun is not a direct effect of gravity on light. The bending of light near the sun is a result of gravity creating a density gradient of the medium, and the density of the medium altering the speed of light. Gravity cannot affect the propagation of light and the time, the massless. You cannot force a momentum on light, the massless, by proclamation. Observers cannot bend light. Einstein's Relativity is a result of forcing an invalid momentum on light, the massless, by proclamation.

If you want to show Special Relativity and General Relativity are valid theories, all you have to do is to show that the propagation of light is relative or light behaves as golf balls; no one can. Light is not relative and light does not behave as golf balls [6]. In Special Relativity and General Relativity, Einstein assumed light as moving golf balls without a proof, and the assumption is not provable.

Galileo correctly claimed that the laws of motion mechanics, the laws of motion of objects of mass are independent of frame of reference. Einstein tried to force the laws of propagation of light into Galileo's claim by giving light an artificial momentum or by forcing light to behave as golf balls. Light propagates in space, in vacuum. Light does not propagate on inertial frames. You do not have to force an artificial momentum on light, as Einstein did, in order for light to fit into Galileo's claim that the laws of physics are independent of frame of reference.

Laws of propagation of light are independent of inertial frames since light is not relative and light does not propagate on inertial frames. Laws of motion of masses are independent of inertial frames since the motion of masses is relative. Laws of physics are independent of the frame of reference naturally. Light propagates in the vacuum even in the presence of a medium. Light remains in the vacuum if the medium is pulled out. Light does not move with the medium if the medium is pulled out. If light propagates in a medium, light must move with the medium if the medium is pulled out; it does not happen.

The laws of motion of matter and the laws of propagation of light are independent of frame of reference for completely different reasons. The laws governing the motion mechanics (the motion of objects of mass) and the laws governing the propagation of light (the massless) cannot be unified. The motion of masses and propagation of light are two different processes that have no common unified framework. Laws of physics are naturally frame independent. No Special Relativity or General Relativity are required. Fallacy of Special Relativity and General Relativity is the forcing of a fake momentum on light. It is the forcing of an imaginary momentum on light that altered the reality in Modern Physics. Light has no momentum. Light can generate momentum on charge particles.

Gravity has no direct effect on light. Gravity cannot bend light. Gravity has no effect on the massless. Any moving entity that has no standstill existence cannot be relative. Light has no standstill existence and hence light is not relative. A mass at standstill cannot have a speed  $c$  relative to light. A mass has no rest energy  $E \neq mc^2$ . Time is not relative. Motion of a mass is relative. The mass itself is not relative. A length, which is a width in space, exists. But a time period, which is a width in time, is only available on its passing, a time period does not exist in real time. Time is not an axis since time-width is only available on its passing.

The invisible large gravitational attraction point at the center of every galaxy is the center of mass of a galaxy. Although the center of mass of a galaxy has all the attributes of a blackhole (blackpeak), it is not a blackhole (blackpeak). There are no blackholes (blackpeaks) at the centers of galaxies. Gravity cannot bend light in the absence of a medium or in a vacuum. Light is not relative. Light cannot detect geodesics, and hence light cannot propagate on geodesics. Geodesics are limited paths. Light has no such path limitations since light can be pointed in any direction, even in a direction orthogonal to geodesics. Gravity cannot alter the speed of light, the path of light, and the wavelength in a vacuum. Gravity cannot alter time and frequency.

The earth making one complete orbit is the time, a year. The time, a year, is independent of clocks. The time, a year, is independent of the speed of the observers and the mass of the earth, the gravity. It is the orbit as a whole that moves against the motion of the observers, not the orbiting object, the earth. The motion of earth on its fixed orbit is independent of observers. Observers cannot derail a train. Observers cannot deorbit a planet. The time, a year, is affected by the changing mass of the sun. A year is unaffected by the readings on clocks.

A clock is a measuring device we engineer to breakdown the time, a year, into manageable intervals. How we design clocks for breaking down a year into manageable chunks does not affect the time, a year. It is the mechanisms of the clocks that are affected by the motion and gravity, not the time, a year, itself. Clocks do not define the time, a year. Clocks break down the time, a year, into smaller finer intervals. The time, a year, is independent of the observer motion, gravity, and clocks. It is the reading on clocks that depends on their mechanisms, motion, gravity, temperature, pressure, and the environment the clocks are in, not the time itself. If clocks determine time and how we age, we can engineer the time itself and how long we live; this shows the ridiculousness of the use of clocks to claim time is relative and a person on earth ages faster than a person in a spaceship.

Speed of light cannot limit the speed of objects of mass. The speed of light is the speed of light, nothing more. Universe has no speed limit. Once a burst of light is out of a source, the velocity of light can only be altered by a medium. The velocity of light is both observer and gravity independent. Despite how colossal a mass is, light is unaffected by a mass in a vacuum. The propagation of light is not relative. Modern Physics is hanging on a single thread, a false premise, that light behaves as golf balls. Since light is not relative, Einstein's relativity, Quantum Mechanics, and Modern Physics in general fall apart.

*"Light does not behave like golf balls."*

*"Observers cannot derail a train."*

*"Light is unaffected by gravity."*

*“Light is unaffected by the source/observer motion.”*

*“Neither the observers nor gravity can bend light.”*

*“The redshift/blueshift of light from a star is the wavelength shift, Frequency is unaltered.”*

The frequency, wavelength, direction, path, and the velocity of light from a star is independent of the motion of the star, the galaxy, or the observers. The properties of light are independent of the source/observer motion.

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