

# Undoing a Century of Cosmological Errors

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## Abstract

The objective of this study is to examine and report on the scientific and mathematical errors that have collectively created a prevailing view about the cosmos that is significantly in error. Because of a fundamental cosmological error dating back to 1915, currently accepted cosmology has built an elaborate structure of theories that are without foundation. The mythical *big bang* could not possibly have happened, galaxies are not retreating from each other, we are not on a collision course with Andromeda, and both dark matter and dark energy are fictions. Because of two mathematical oversights also dating back to 1915, general relativity has become the currently accepted explanation for gravity. Unfortunately, this geometric theory of gravity is fatally flawed. Four-dimensional spacetime does not exist, does not curve, and does not interact with gravity. Gravity does not bend light, and gravitational waves do not exist. This study conclusively proves that the following hypotheses are false: big bang theory, Hubble's law, expansion theory, 4-D spacetime, general relativity, dark matter, dark energy, cosmic microwave background theory, gravitational waves, and Higgs boson theory. The universe is an infinite timeless expanse without boundaries of any kind and without beginning or ending. There is also a limiting distance at which light emitted from extremely distant galaxies falls beneath the visible spectrum.

**Keywords:** *Cosmology; Astronomy; Theoretical Physics; Big Bang; Spacetime; General Relativity; Gravity; Redshift; Spacetime; Dark Matter; Dark Energy; Expansion Theory*

## Introduction

### The Fatal Redshift Error

In 1915, astronomer Vesto Slipher observed that light from some spiral nebulae is redshifted and falsely presumed he was witnessing a light source rapidly moving away from the observer and somehow stretching the wavelength of light it emits [1]. Slipher did not understand how light attenuates and mistakenly believed he was witnessing a Doppler effect [2]. This is the fundamental error that permeates all of mainstream astrophysics.

Redshift and Doppler are two fundamentally different phenomena. Redshift applies to light. Doppler applies to sound. In redshift there is an actual increase in wavelength. In Doppler there is only the illusion of a change in wavelength. To presume that they are the same Doppler-redshift is rather like referring to a line in geometry as a straight-curve [2].

Light waves are transverse (i.e., oscillate perpendicular to their path) and do not require any medium through which to travel. Sound waves are longitudinal (i.e., vibrate parallel to their path) and can only propagate by compression and rarefaction of the medium through which they travel (e.g., air, water, solids) [2].

### Doppler is Distortion

If the source of a sound is moving toward you, identical length

waves hit your ear more frequently, distorting the perceived sound to a higher frequency. As a sound source moves away from you, identical length waves hit your ear less frequently, distorting the perceived sound to a lower frequency. This is the Doppler effect.

### Redshift is Attenuation

Over extreme distances, light attenuates according to the following equation  $c = \lambda f$

where  $c$  = speed of light;  $\lambda$  = wavelength of light; and  $f$  = frequency of light wave.

The farther light travels, the greater the degree to which its frequency slowly diminishes as its wavelength correspondingly increases. We observe this phenomenon as a *redshift*, i.e., the tendency of visible light to drop toward the red end of the spectrum. The farther away a galaxy is, the more its light shifts toward the red end of the spectrum [3].

If a distant source emits light in the middle of the spectrum, it can be in the red end of the spectrum by the time we receive it. If, however, that source emits light in the blue end of the spectrum, it will have redshifted but could still be in the blue range by the time we receive it. There is no such thing as a "blueshift" whereby wavelengths shorten and frequency increases. All light is redshifted. Light cannot behave in any other way [3].

Because the surface temperature of the Sun is 5,500<sup>o</sup> C, it emits light in the yellow range of the spectrum. A star with a surface temperature of 12,000<sup>o</sup> C emits light in the blue range of the spectrum, and one with a surface temperature of 3,000<sup>o</sup> C emits light in the red range of the spectrum.

If Star *X* at a temperature of 7,000<sup>o</sup>C and Star *Y* at 12,000<sup>o</sup>C are the same distance from Earth, we could simultaneously be receiving light from *X* in the red end of the spectrum and light from *Y* in the blue end of the spectrum. The temptation is to conclude that light from *X* is redshifted and light from *Y* is blueshifted, but that would be a mistake. The light from both *X* and *Y* is being attenuated (redshifted) at the same rate. It is only because light from *Y* started out at a much higher frequency that it has not yet dropped into the red range of the spectrum.

For over 100 years, astrophysicists have ignored frequency at source. They falsely assume galaxies are in motion and mistakenly believe that redshift indicates velocity of motion. This is the logical error of circular reasoning, i.e., including the conclusion in the assumption, then using the assumption to prove the conclusion.

### There is No Blueshift

In his 1915 observations, Vesto Slipher made two false presumptions: (1) galaxies from which light is redshifted are in motion away from us, and (2) those from which light is received in the blue range of the spectrum are in motion toward us. Slipher estimated that some galaxies were retreating from us at the rate of 1,100 km/s – and Andromeda appeared to be approaching us at 300 km/s [1].

Light from the following nebulae in the 700 to 5,000 light-year range is predominantly blue at source: Helix NGC7293, Iris NGC7023, and Swan's Crescent NGC6888. Supernovae SN1885A and SN1986J (in Andromeda); SN1994D and SN2007bi (in Virgo); and SN1987A (in the large Magellan Cloud) emit intense blue and violet light that by the time it reaches us has been redshifted from its very high frequency at source but still appears to us to be in the blue range of the spectrum [3].

There is no blueshift. There are no galaxies rushing toward us. We are not on a collision course with Andromeda.

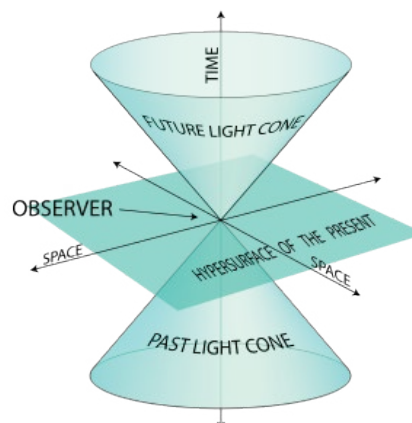
### Frequency at Source

Redshift is a measure of two things only: (1) frequency at source, and (2) distance. Unless one knows the frequency of light emitted at source, there is no way to know by how much it has been redshifted by the time it reaches the observer. Astrophysicists have never paid attention to frequency at source. They falsely assume they are witnessing galaxies in motion and mistakenly use redshift to indicate a presumed velocity. This is the logical error of circular reasoning, i.e., including the conclusion in the assumption, then using the assumption to prove the conclusion. If we know the frequency of light at its source, then redshift lets us know how far away that source is. There is nothing else that redshift can tell us.

### Spacetime is Mathematical Fiction

In 1907, Hermann Minkowski formulated the theory of

four-dimensional space-time, which hypothesis has become known as *Minkowski spacetime*. This is a mathematical model that supposedly fuses time and the three dimensions of space into a single four-dimensional continuum [4].



**Figure 1:** Hypothetical Minkowski 4-D Spacetime

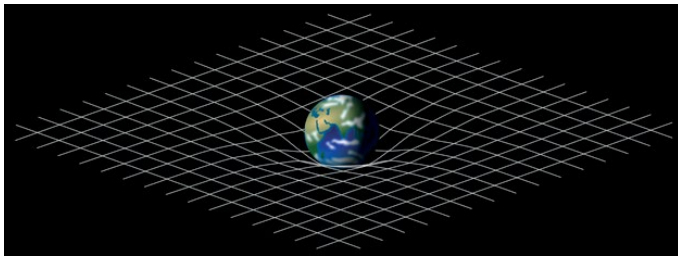
Notice that it is not possible to assign co-ordinates to the hypothetical time axis. Spacetime is a graphical excursion that bears no relation to reality. Time is not a physical thing and cannot be fused with three physical dimensions [5].

Suppose a world of two dimensions could exist and you wished to represent it on a three-dimensional graph. How would you know if that circle you see is a sphere, a cone, a cylinder, a dome, or something else? It is not possible to extrapolate meaningful information from two dimensions into three, nor from three into four.

Time measures the changing positions of objects and sequences of events that occur within space. Time is an abstract (nonphysical) measurement within the 3-D. Time cannot be extracted from space and projected onto a fourth supposedly physical axis with its own independent set of reference points. Whatever model you create that includes mathematical measurements of an intangible dimension cannot possibly be real. To believe in spacetime is to believe in at least one direction to which one cannot point [5].

### Disproof of General Relativity

In 1916, Albert Einstein published his paper on *general relativity*, the geometric theory of gravity that is the current definition of gravity in modern physics [6]. General relativity (GR) presumes that the force of gravity that is associated with the curving/warping of spacetime is the result of a geometric distortion of four-dimensional spacetime by massive objects. The more mass that produces gravity in a body, the more distortion results. This presumed distortion allegedly changes the trajectories of objects moving through space and even the paths of light rays as they pass close by massive objects. Supposedly, massive objects bend the space around them, causing other objects to deviate from the straight lines they otherwise would have followed [6]. Einstein chose the fictional Minkowski spacetime model to depict graphically the gravitational forces supposedly implied in general relativity [5].



**Figure 2:** Hypothetical Fabric of Spacetime

In this model, a massive object (planet or star) appears to be sitting on a fourth-dimensional spacetime fabric, weighing it down, as a heavy ball would do to a rubber membrane in three dimensions. A beam of light passing close by the Sun supposedly follows the lip of the curved spacetime fabric, causing it to bend towards the Sun (rather than pass by it in a straight line). General relativity thus depends on the following three unverifiable assumptions: (1) 4-D spacetime is real, (2) spacetime curves, and (3) spacetime interacts with gravitational forces of massive objects [5].

General relativity is fatally flawed. The 4-D spacetime model upon which general relativity is based is an illusion. Spacetime does not exist, does not curve, does not interact with gravity, and cannot bend light [4].

Spacetime is the geometric illusion that can be expressed algebraically as  $3D + 0D = 4D$  (where  $D$  = dimension). Geometry is the mathematics which describes the properties and relations of points, lines, surfaces, and the location of objects. Mathematics is an abstract form of measurement and not a physical thing. As such, geometry can neither cause nor be influenced by anything that exists in physical reality. General relativity fails because it falsely presumes that a physical force (gravity) interacts with an abstraction (geometry) that has no physical existence [4].

### Einstein versus Newton

Newton predicted that a light beam passing close by the sun would bend slightly towards it by 0.93 arcseconds; however, he was not talking about gravity. Newton was an expert in optics, having written the original treatise on this subject in 1704 [7]. He knew that light bends as it passes from air (low density) into water (high density) and surmised that the same thing would happen when light passes from space through the dense photosphere surrounding the sun.

Einstein predicted that a light beam grazing by the sun would bend slightly towards it by about 1.75 arcseconds. Experimental observations from the Solar Eclipse of 1919 suggested that Einstein's prediction closer than Newton's; and because of those measurements, Newtonian gravity was scrapped in favor of general relativity [8].

The results of the 1919 Solar Eclipse experiment were inconclusive, however. An arcsecond is one 360<sup>th</sup> of a degree, or the angle made by the hypotenuse of a right-angled triangle one inch high and 1.9 miles in length. The difference between Newton's and Einstein's predictions was only 0.82 arcseconds, which tiny variation is statistically insignificant [9].

Stephen Hawking said of the 1919 deflection results, "*Their measurement had been sheer luck, or a case of knowing the result they wanted to get, not an uncommon occurrence in science*" [10]. The errors in data were as large as the effect they were trying to prove, thus making the results inconclusive. There is no way to know whose prediction was more accurate, Newton's or Einstein's. Neither does it matter because Newton was talking about optics and Einstein was talking about gravity.

Einstein failed to make his case for a geometric theory of gravity. Therefore, Newton's law of universal gravitation still stands. Light has zero mass and is thus unaffected by gravity.

### Hubble's False Law

Edwin Hubble compounded the Slipher error by presuming that galaxies are receding from the Milky Way and the farther they are away, the faster they are receding. Hubble estimated radial velocities of 46-star clusters on the unwarranted assumption that they were travelling on straight line paths diverging from a presumed central colossal explosion.

In 1929, Edwin Hubble presented data from which he formulated Hubble's law, which theory is considered the ultimate observational basis for expanding universe theory. From 24 sets of nebulae data, Hubble selected five that demonstrated a perfect straight-line relationship between distance and presumed velocity [11]. Five, however, is a statistically insignificant sample size from which to project meaningful data about the entire universe.

Hubble falsely presumed redshift to be a measure of velocity away from us. He further misinterpreted redshift data to suggest that galaxies are retreating from us at an accelerating rate [12].

Hubble conveniently omitted data from galaxies from which we receive light in the blue range of the spectrum (e.g., Andromeda, M86, M90, M98) [12]. This is selection bias at its worst. By ignoring data, he believed indicated that some galaxies were heading towards us, Hubble self-disqualified his theory as constituting a *law*. A law in physics permits no exceptions. Newton's universal law of gravitation, for example, does not permit occasional exceptions whereby some objects fall upwards or repel each other.

Hubble used contrived estimates of distance to develop his straight-line relationship between distance and presumed velocity. He imagined Virgo to be 3.4 times closer to us than NASA's measurement indicates – and the other star clusters to range from 12 to 68 times farther away from us than NASA's measurements indicate [12].

Hubble assumed that nebulae are accelerating away from us, then found the mathematics to prove his foregone conclusion. This is the logical error of circular reasoning, i.e., including the conclusion in the assumption, then using the assumption to prove the conclusion.

Because of false assumptions, faulty reasoning, and contrived data, Hubble's law is fatally flawed. Edwin Hubble assumed that nebulae are accelerating away from each other, then found the mathematics to prove his foregone conclu-

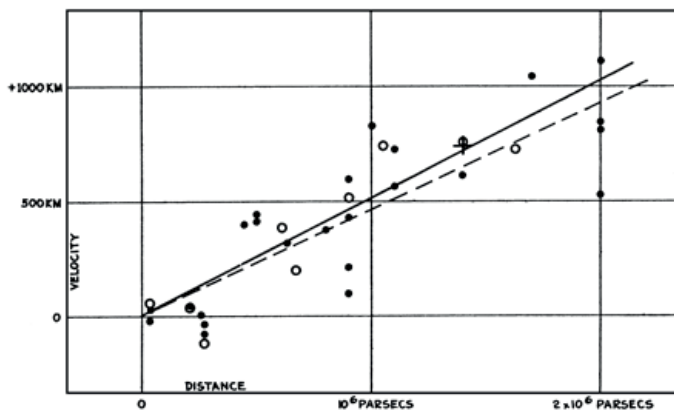
sion. This is the logical error of circular reasoning, i.e., inadvertently including the conclusion in one’s assumption, then using this assumption to prove the conclusion.

The following table summarizes the estimates from which Edwin Hubble in 1929 concluded that galaxies are receding from the Milky Way at a velocity proportional to their distance. Entries in the “Distance-EH” column indicate the distances that Hubble estimated (based on his multiple false assumptions). Entries in the “Presumed Velocity” column indicate the velocities that Hubble inferred from his measures of redshift (falsely presuming redshift to be a Doppler effect).

**Table A:** Edwin Hubble’s Estimates of Distances and Velocities

Cluster Galaxy	Distance-EH <sup>4</sup> (ly)	Presumed Velocity <sup>4</sup> (km/s)	Ratio (Velocity/Distance)
Virgo	78	1,200	15.4
Ursa Major	1,000	15,000	15.0
Corona Borealis	1,400	22,000	15.7
Bootes	2,500	39,000	15.6
Hydra	3,960	61,000	15.4
Average			15.4

The results in the *Ratio* column above are the five points that Hubble posted on the graph below to create a remarkably tight straight-line relationship between the distance of a galaxy and how fast it is supposedly moving away.



Something is seriously wrong with Hubble’s estimates of distance, however. If we substitute modern estimates of distance in the “Distance-Modern” column below, a quite different picture emerges. Data in the “Distance-Hubble” column are the figures published by Edwin Hubble in his seminal 1929 paper [11]. Data in the “Distance-Modern” column are published data sourced from the Hipparcos Catalogue of 188 218 [43].

**Table B:** Modern Estimates of Distance Compared to Edwin Hubble’s Estimates

Brightest Star	Distance-Modern (ly)	Distance-Hubble <sup>4</sup> (ly)	Error Factor
Spica (Virgo) <sup>6</sup>	262.19	78	(-3.4x)
Alioth (Ursa Major) <sup>7</sup>	80.93	1,000	12x
Alphecca (Corona Borealis) <sup>8</sup>	75.05	1,400	19x
Arcturus (Bootes) <sup>9</sup>	36.72	2,500	68x
Alphard (Hydra) <sup>10</sup>	180.30	3,960	22x

Edwin Hubble thus estimated Virgo to be about 3.4 times closer than it really is, and the other clusters to be from 12 to 68 times further away than they really are. If Hubble had used realistic estimates of distance, there would have been no straight line on his graph, only random points indicating a zero correlation between distance and velocity. Hubble apparently manipulated his data to produce the results he wanted.

Either galaxies are moving apart, or they are not. The theory which suggests that the distances between galaxies are increasing is fatally flawed. Therefore, we must presume that galaxies are in the same positions relative to each other that they have always been in. Hubble’s “law” is thus a mathematical diversion that bears no relation to reality. Redshift is not Doppler. Galaxies are not retreating from the Milky Way. If galaxies are not in retreat, then their imagined velocity of retreat cannot be increasing.

**The Universe is Not Expanding**

In 1930, Richard Tolman devised a surface brightness test to determine whether the universe is static or expanding. Tolman’s test compares the surface brightness of galaxies to their degree of redshift (measured as *z*). Tolman believed redshift to be the degree of reduction in energy (i.e., attenuation) of each photon [13].

In a static universe, the light received from an object drops in proportion to the square of its distance, and the apparent area of the object also drops in proportion to the square of its distance. Thus, the surface brightness (light received per surface area) is constant, independent of distance. In an expanding universe, however, the surface brightness would decrease with the fourth power of (1 + *z*).

For 90 years, mainstream astrophysicists have never checked the validity of their assumptions by means of the Tolman test. They accept on blind faith the Slipher error of mistaking redshift for Doppler.

In 2014, Eric Lerner and a team of astrophysicists applied the Tolman test by measuring the surface brightness (per unit area) of over 1,000 near and far galaxies. If galaxies had been moving away from each other, they would have appeared fainter the farther away they were, i.e., their surface brightness would have been diminishing. Lerner’s team found that in every case surface brightness remains constant regardless of distance. If any far distant galaxy had been in motion away from us, its surface brightness would



have been much less than that of nearby galaxies, a phenomenon that has never been observed [14]. Thus, there is zero tangible evidence that galaxies are moving apart and overwhelming evidence that they are not.

One thousand galaxies in the Lerner study is a statistically significant sample from which to project meaningful data about the entire known universe. It is 200 times the number of galaxies that Edwin Hubble included in his biased sample.

The universe is an infinite expanse and as such cannot have any boundaries that are expanding. Infinity cannot become any larger than the everything that it already is. Application of the Tolman surface brightness test tells us that galaxies are in the same position relative to each other that they have always been in.

### The Big Bang Never Happened

In 1931, Georges LeMaître published the English version of his earlier paper, "A homogeneous Universe of constant mass and growing radius accounting for the radial velocity of extragalactic nebulae" [15]. LeMaître initially called his theory the *hypothesis of the primeval atom* and described it as the "cosmic Egg exploding at the moment of creation". The mathematics used to justify this speculative hypothesis were based on the false assumption that redshift measures velocity of source away from the observer. In addition to being an astronomer, LeMaître was also a Catholic priest who felt comfortable with the notion that God had created the atom/egg that subsequently blew up to create the universe. Thus, what later became known as *big bang theory* had its origin in metaphysics.

Both LeMaitre and Hubble calculated what they believed to be radial velocities of nebulae. They did so by taking a presumed velocity they claim to have measured on a supposed vector between Earth and each nebula in question, then using trigonometry to estimate what the velocity would be on a vector from the universe's presumed origin-without having the foggiest idea where said origin could possibly be located. Both scientists started with the *a priori* assumption that the universe was created by a singularity that happened at a specific point in space, then developed calculations to justify their foregone conclusion.

According to this prevailing and firmly entrenched cosmological model, the universe was created by a big bang explosion/singularity that happened some 13.8 billion years ago. This date was arrived at by working backwards in time from equations that supposedly measure the universe's alleged rate of expansion.

Proposing a big bang or other singularity as cause does not answer the question as to how the universe was created. It merely raises another question as to how the singularity was created [16].

According to big bang theory, the entire universe began from some tiny point violently exploding out pure energy that almost instantly became particles that eventually combined to form elements, molecules, gases, stars, and galaxies. In other words, the universe spontaneously created itself from nothing, a whimsical idea that defies physics. Nothing cannot be

the cause of something. Aristotle expressed it this way: "*The notion that there could be nothing that preceded something offends reason itself*" [16].

Points are artificial mathematical abstractions used to specify locations on a graph. Points do not in fact exist. Some variations of this theory are vague about what it was that allegedly exploded but suggest it was something that had zero dimensions. This is the same faulty logic. To have zero dimensions is to have zero existence.

Some big bang theorists believe that the imagined singularity was a tiny solid mass with all the matter in the universe compacted into the tiniest bit of space, and then it blew up. Even if it were possible to compress such huge mass into such a tiny space, the intense gravity would cause it to implode inward rather than explode outward. In addition to this scientific impossibility, there are also two logical errors: (1) all of the matter in the universe could not have existed prior to the universe; and (2) something could not have compacted this matter before any means of compaction existed.

Some big bang proponents claim that it was not a single point in space that exploded but rather every point in the universe participated in the hypothetical *big bang*. In other words, the alleged explosion happened everywhere at the same time and not at any specific location. Whether one location or every location existed prior to existence is an equally nonsensical argument.

Every version of expansion theory includes its conclusion in its assumption, then uses this assumption to prove its foregone conclusion. This is the logical fallacy of circular reasoning.

The universe is defined as everything that exists. Big bang theory falsely claims that the something which created the universe pre-existed existence – a contradiction in terms [16].

Space is defined as the expanse of the universe beyond Earth's atmosphere. Space is in the universe; the universe is not in space. Big bang theory falsely claims that the something which created the universe was located somewhere before the concept of location (i.e., in space) existed – a second contradiction in terms [16].

Time is defined as the continuous duration of existence as seen as a series of events. Without existence and events, the concept of time has no meaning. Time is in the universe; the universe is not in time. Big bang theory falsely claims that there was a point in time at which time began—a third contradiction in terms [16].

## A Child's Perspective:

Parent Speaking	Child Responding
Once upon a time, a teeny-weeny dot exploded, creating everything that exists.	Who made this dot?
Nobody, it was just there.	Where? If nothing existed, there was no place to put a dot.
Stop interrupting, I am trying to tell a story.	And how could a dot exist before there was such a thing as existence?
Never mind, it just did.	When did this event happen?
Almost 14 billion years ago.	A year is the time it takes for Earth to circle around the Sun, isn't it?
Yes.	Before there were planets or suns, there was no such thing as years. Correct?
Yes.	So how can you say this story began once upon a time? If there weren't any years, there wasn't any time.
Stop trying to be so logical. Not everything is logical.	Apparently not. So why should I believe this story?
Because I said so.	

## Nonexistent Dark Matter

In 1933, Fred Zwicky inferred the existence of *missing mass* (dark matter) when he discovered that the mass of all the stars in the Coma cluster of galaxies provided only about one percent of the mass needed to keep the galaxies from escaping the cluster's presumed gravitational pull [17]. In 1970, astronomers Vera Rubin and W. Kent Ford supposedly confirmed dark matter's existence by similar observations, namely that the mass of stars within a typical galaxy is only about 10 percent of that presumed to keep those stars rotating around the galaxy's center.[18] Dark matter has been hypothesized to explain an unknown force of gravitational attraction that appears to be keeping the universe from expanding too quickly.

Dark matter is hypothetical matter that supposedly suffuses the entire universe and fills the dark spaces between stars and galaxies. Dark matter is inferred to exist only because of the presumed gravitational pull it appears to have on visible matter rather than from any intrinsic luminosity [19].

Measurement of its presumed gravitational effects on galaxies suggest that dark matter may account for about 85% of the matter in the universe and about 25% of its total energy density. Its presence is speculated on the basis of supposed gravitational effects that cannot be explained by accepted theories of gravity unless more matter is present than can be seen. For this reason, dark matter is theorized to be abundant in the universe, having had a strong influence on its structure and supposed evolution [20].

Dark matter is called dark because it does not interact with observable electromagnetic radiation and is undetectable by astronomical instruments. Evidence for dark matter comes from calculations supposedly showing that many galaxies would fly apart or would not have formed if they did not contain a large amount of unseen matter [21].

Dark matter cannot be seen by telescopes nor detected by any other means. Light passes through dark matter, which neither emits nor absorbs light nor any other electromagnetic energy. Dark matter does not interact with normal matter and does not participate in nuclear fusion. Dark matter does not have any properties of matter. In fact, dark matter has no properties at all because it is a fiction that does not exist [22].

Dark matter was hypothesized to explain the presumed gravitational effect on galaxies that are supposedly keeping the universe from expanding too quickly. However, the universe is not expanding. There is no gravitational force opposing any falsely presumed rate of expansion. Dark matter is a fictional diversion that obscures cosmology.

## Zero Dark Energy

In 1998, Adam Reiss, Saul Perlmutter, and Brian Schmidt claimed to have discovered the existence of hypothetical dark energy, a gravitationally repulsive force believed to be opposing the gravitational attraction of dark matter [23]. The supposed gravitational effect of dark matter appeared to be slowing down the presumed rate of expansion of the universe. When redshift measurements of supernovae seemed to suggest that the universe was expanding at an accelerating rate, then dark energy was postulated to be an unseen force opposing dark matter, thereby reducing its effects.

Both dark matter and dark energy are examples of misinterpreting evidence to support the theory rather than changing the theory to explain the evidence. For many decades, astronomers could have asked themselves these two questions: (1) Does non-material dark matter make any sense? (2) What assumptions are we making that led us to postulate a mysterious substance that has no properties? Perspicacious answers to these questions would have revealed astrophysics' biggest blunder of the century, that of mistaking redshift attenuation for a Doppler effect [2].

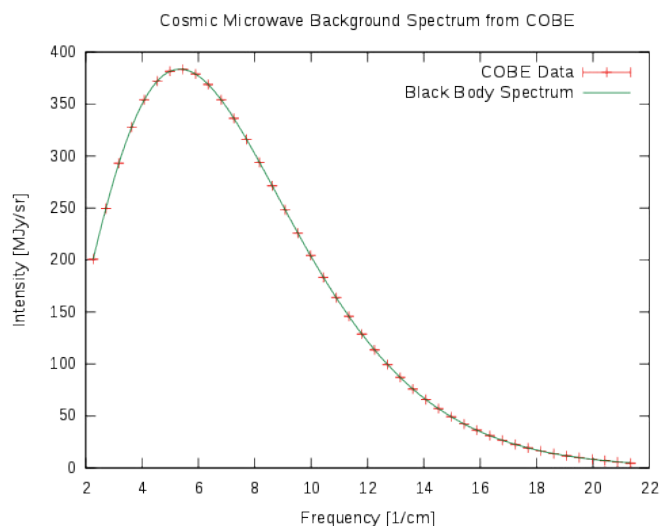
## Cosmic Microwave Background is Blackbody Radiation

In 1964, cosmic microwave background (CMB) radiation was discovered by radio astronomers Robert Wilson and Arno Penzias [24]. They heard the CMB as a static buzzing sound coming from every part of the sky. Big bang proponents had been searching for confirming evidence for their theory and jumped to the conclusion that the CMB is an echo of the singularity explosion that allegedly created the universe.

CMB radiation can be detected by telescope in every direction as a patchy background about 13.4 billion light-years away [25]. This observation is mistakenly believed to be thermal radiation left over from *recombination*, the epoch during which charged electrons and protons supposedly first became bound to form electrically neutral hydrogen atoms, shortly after the alleged big bang. The assumption is that hydrogen, the lightest element, was made exclusively during the big bang and in the general area of its supposed origin. However, ionized hydrogen gas in fact permeates the entire universe [26].

From 1989 until 1993, COBE satellite Explorer 66 investigated the cosmic microwave background [27]. Astrophysicists expected to see evidence of directional dependency (anisotropy) that could be traced back to the site of the alleged big bang. That was not what they saw, however. Instead, Explorer 66 measured an isotropic blackbody spectrum with little variation across the sky.

The cosmic microwave background spectrum as measured by the FIRAS instrument on the COBE is the most precisely measured blackbody spectrum in nature. It is impossible to distinguish the observed data from the theoretical curve [25].



**Figure 3:** Blackbody Measurement of CMB

The above graph represents the cosmic microwave background spectrum as measured by the FIRAS instrument on the COBE. This is the most precisely measured blackbody spectrum in nature. The error bars are too small to be seen even in an enlarged image, and it is impossible to distinguish the observed data from the theoretical curve

NASA thus confirms that the CMB follows the precise curve for blackbody radiation. A blackbody is an opaque object in space that absorbs radiation of all wavelengths that falls on it. Then, when the blackbody is very hot and at a uniform temperature, it emits its own radiation that is outside the visible spectrum of light. NASA's measurements indicate that this blackbody curve peaks at 0.3 cm wavelength and 100 GHz frequency, which is at the high end of the microwave spectrum. The blackbodies in question are most probably interstellar dust [27].

The cosmic microwave background is smooth and looks the same in all directions for the same reason a fog looks smooth and uniform in all directions. The CMB thus appears as an electromagnetic fog on optical telescopes and as a static hum on radio telescopes [27].

### Higgs Boson Myth

In 1964, Peter Higgs postulated the existence of the Higgs boson, a hypothetical elementary massless particle presumed to have been the only original particle produced by the alleged big bang explosion. This boson instantaneously

decomposed into mass bearing particles as it passed through an energy grid (Higgs field) that supposedly permeates all of space and is presumed to be scalar, i.e., having magnitude but no direction [29]. In popular culture, the Higgs boson is often called the *God particle* because it is presumed to be the origin of mass in the universe.

Higgs theory is a fanciful diversion from reality which suffers from three logical inconsistencies and a false presumption. First inconsistency is that *massless particle* is a contradiction in terms. *Particle* is literally defined as a "minute portion of matter".

Second inconsistency is that the hypothetical Higgs field somehow pre-existed existence. The big bang was hypothesized to have been the cause of all energy and matter in the universe. Yet somehow the first particles spewed from this explosion interacted with an energy grid that was already there.

Third inconsistency is that a *scalar grid* may be another contradiction in terms. Anything that has a physical size (magnitude) must also have a physical location. Said location must be in some direction relative to something else. To be omnidirectional (i.e., existing in every direction) conveys specific directional information.

The false presumption on which Higgs theory is based is that the universe could have been created by a big bang singularity, which notion is both logically and scientifically impossible [16]. The universe is defined as everything which exists. The universe could not have been created by something that pre-existed existence. There is no point in time at which time began. Time is in the universe; the universe is not in time.

In 2012, after hundreds of millions of failed collision experiments at the Large Hadron collider and the Fermi National Accelerator Laboratory, only one such collision appeared to have produced elementary particles suspected of having been the result of instantaneous decay of one hypothetical Higgs boson [30, 31]. A success rate of less than 0.000001 percent, however, indicates that said result was due entirely to experimental error.

### Nonexistent Gravitational Waves

Gravitational waves are alleged disturbances in the curvature of hypothetical spacetime supposedly generated by accelerated masses that propagate as waves outward from their source at the speed of light. They were predicted by Einstein in his fatally flawed theory of general relativity [32]. Gravitational waves are falsely presumed to transport energy as alleged gravitational radiation, a presumed form of energy similar to electromagnetic radiation.

In 2015, scientists claim to have detected gravitational waves using an extremely sensitive instrument called Laser Interferometer Gravitational Wave Observatory (LIGO) [33]. These presumed gravitational waves appear to have been generated when two black holes crashed into each other. This collision happened 1.3 billion years ago, but evidence of it did not reach Earth until 2015.



LIGO is a large-scale experimental observatory designed to detect presumed cosmic gravitational waves. It consists of two detectors situated 3,000 km apart. Each L-shaped facility has two arms 4 km long positioned at right angles to each other. Lasers are beamed down each arm and bounced back by mirrors. LIGO has two observatories to rule out that a potential gravitational wave signal is not caused by a localized terrestrial disturbance [34].

Laser interferometry is a technique in which light from a single source is split into two beams that travel in different optical paths and are then recombined at a common detector [35]. A minuscule change in light frequency on one of those beams is interpreted as a difference in its optical path length, presumably suggesting that the light source has moved a tiny bit during the time it took to split and recombine the two beams.

In 2015, both LIGO observatories heard what astronomers call a *chirp*, a sine wave of amplitude 32 Hz lasting for 0.2 of a second. This chirp was a momentary irregularity in electromagnetic radiation measured by both detectors [33].

To presume that hypothetical gravitational waves can be measured by changes in light frequency is to commit the logical error of circular reasoning, i.e., including the conclusion in the assumption, then using the assumption to prove the conclusion. The assumption is that gravitational waves can be detected by tiny changes in electromagnetic radiation. The conclusion is that an electromagnetic chirp proves the existence of gravitational waves.

Gravitational attraction creates an accretion disk of gaseous matter that spirals in toward black holes [36]. Gravitational and frictional forces compress and raise the temperature of the material in this disk, causing the emission of electromagnetic radiation which can be in the X-ray part of the spectrum [37].

When two black holes merge, their accretion disks generate a tiny spike in frictional heat lasting for a fraction of a second. It is this spike in heat that LIGO measured rather than alleged gravitational waves [38].

Frequency at source is a function of temperature. As an example, the temperature of the accretion disk surrounding the super massive black hole at the center of the Milky Way is estimated to be 10,000 °C, causing it to emit X-rays just outside the event horizon. The frequency spike of 32 Hz observed by LIGO represents an increase of less than 0.00000001 percent in X-ray frequencies. What LIGO measured was an insignificant increase in temperature generated by the collision of accretion disks surrounding two black holes [38].

### An Infinite Universe

Either the universe was created by a *big bang* singularity, or it was not. There is no third possibility. If it was not created at some point in time, then it must be ageless/limitless/infinite [39].

There is no need to develop an alternate theory about the origin of the universe. If it did not suddenly pop into exist-

tence, then from our frame of reference it has always been here. The ill-fated big bang theory was an attempt to answer why there is a universe. Questions of *why*, however, belong to the realm of philosophy rather than science.

### A Spherical Horizon

The Hubble Space Telescope creates for us a spherical horizon with radius of approximately 13.4 billion light-years (Gly). At the perimeter of our horizon is galaxy GN-z11 [39].

Suppose there is an advanced civilization in GN-z11 with technology equivalent to ours. We are at the perimeter of their spherical horizon. If we were to draw a graphical representation of our two horizons, the distance from their furthest edge to our furthest opposite edge would be two diameters or 53.6 Gly [39].

Suppose there is another advanced civilization at the farthest edge of GN-z11's horizon. Adding the three connecting horizons gives us an expansive view of three diameters or 80.4 Gly. This process of connecting spherical horizons could go on forever because the universe extends to infinity in every direction [39].

### How Far Visible Light Can Travel

Over extreme distances, the energy of light gradually diminishes (attenuates). As its frequency slowly reduces, its wavelength correspondingly increases. We observe this phenomenon as a redshift, the tendency of visible light to drop toward the red end of the spectrum. Redshift measurements suggest that the energy of light emitted from far distant galaxies may drop beneath visibility within a range of from 10 to 14 billion light-years away from us, depending on its frequency at source [40].

Galaxy GN-z11 enables us to estimate rate of attenuation over its distance of 13.39 billion light-years. Light from GN-z11 is dull red, and its frequency is documented by NASA as being in the low red range of the spectrum [41, 42].

Suppose that GN-z11's frequency at source ( $f_s$ ) is 590 THz (mid spectrum) and its frequency received ( $f_{obs}$ ) is 410 THz (low red). This would mean that over 13 billion light-years (Gly), frequency from GN-z11 has dropped by 180 THz. This is equivalent to frequency dropping every billion light-years by 2.75% of the frequency of the previous billion light-years. We can thus express redshift attenuation ( $R_A$ ) by the following equation in which distance ( $D$ ) is in incremental units of one billion light-years (Gly).

$$R_A = f_{obs} = f_s (0.9725)^D$$

When its frequency drops below 400 THz, light is no longer visible. It continues at the speed of light but as electromagnetic energy that cannot be seen. This would happen for GN-z11 at 14.6 Gly – which means that an observer located 2 Gly from Earth in the opposite direction would not be able to see GN-z11 at all [40].

### Unseen Galaxies

At distance 10 Gly the frequency of light from a sun-like star emitting at 525 THz (yellow range) drops below the visible threshold of 400 THz. Thus, we have no way of knowing how



many stars farther than 10 Gly away may be invisible to us. We also have no way of knowing how many galaxies there may be at or beyond 15 Gly because their light will have dropped below the visual threshold of 400 THz some 400 million light-years before it reaches us [40].

It only makes sense that at some far distant point attenuating light eventually drops below the visible range, and it is a convenience of nature that it does so. Without a maximum distance that light can travel, the night sky would be ablaze with a patchwork blanket of light rendering us incapable of distinguishing one celestial object from another. We would never be able to understand the cosmos or our place in it.

## Summary

Redshift is attenuation • There is no blueshift • Spacetime is an illusion • General relativity is a failed theory • Hubble's law is invalid • The universe is not expanding • The big bang never happened • Dark matter does not exist • Dark energy does not exist • The cosmic microwave background is black-body radiation • The Higgs boson does not exist • Gravitational waves do not exist • The universe is infinite • There is a limiting distance to how far visible light can travel.

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