

Red Shift

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A particularly important view of nature and space emerged from red shift observations throughout space. That view includes universal expansion and the big bang. There are many questions uncertainties and issues concerning the correctness of these views. Is a different perspective in order? This chapter redefines cosmological redshift, its cause and the surrounding issues and concepts.

What do we know about frequency shift? Blue light travels in shorter wavelengths than the average wavelength of visible light. Red light has longer wavelengths. Wavelength can be thought of as separation between photons within a stream. Wavelength relative to motion gives the frequency of arrival. Red light photons arrive less frequently than average. I view the photon primarily as a term of convenience and will use it to serve that purpose throughout. The longest wavelength possible would be a continuous straight line transmission of radiation. It would arrive without any impact we call energy. Varying amplitude up and down describes transverse waves. I see the concept of amplitude providing impact. that provides impact. The repeating amplitude of the waves is motion perpendicular to the direction the beam travels and it therefore can impact mass upon arrival. We can label some point on the repeating wave to represent the photon and relate together all forms of radiation. It is the number of waves arriving over time that give the frequency in the formula $E=hF$. It is known that an interacting electron may remove one specific wave thus changing the overall frequency but not the underlying concept of the photon. In any case, it is the existence of wavelength separating waves which gives us something to vary and produce redshift. It is the wavelength that can be modified by gravitational effects.

Red shift theories often focus on the concept of energy. Less frequent arrival of photons means less energy. It seems to me that thinking in terms of energy clouds the ability to analyze red shift. I prefer to think about the ongoing relationship between two adjacent photons. Since the observer determines wave lengths, the length an observer measures depends on either an increase in separation of adjacent photons or a slowing of the stream of photons.

A lengthening frequency shift, specifically a redshift, suggests motion away by the light source, or something similar. The current universal expansion theory is based on the idea of many point sources in space continually separating from each other. Relevant theories were presented in 1917 by Dutch astronomer De Sitter and subsequently in 1929 by Edwin Hubble. The separating activity is a stretching. A frequent analogy relates three dimensional expanding space to a two dimensional inflating of a balloon. If we

accept ongoing expansion as actually happening, then sometime in the past, all points had to be together. Edwin Hubble's contribution was first to observe the redshift of light from many sources throughout space. From this he determined a correlation between the distance of nebula (galaxies), and the redshift. Using Doppler theory, the shift determines the speed at which the sources appeared to move away from us. If you accept either Doppler frequency shift or expanding space as the providing apparent motion away in the heavens, then you cannot dispute a beginning, ie, the big bang! A big bang/origination at some initial time is an irrefutable consequence of a system in which all components are continually moving away from each other at speeds which increase with distance. Many issues have arisen that point out problems with expansion theory. As complications regarding motion arose the separation became defined as the expansion of space so that distance between galaxies expanded while local distances within systems did not. I personally find expansion theory to be hypothetical fantasy, not unlike believing in fourth and using higher dimensions of space.

To explain how radical expansion theory is consider one of my early speculations. I had recognized that continuous expansion could be deemed the cause of gravitation. All masses grew quite rapidly at rates proportional to their current sizes. To keep masses such as the earth and moon from colliding, all space between must grow as well. Then somehow our concept of awareness would change as well so we couldn't detect the constant change in size. The whole idea runs aground in so many ways as all physical reality is variable. The problems are obvious because we are part of the process. Expanding distant empty space has the same problems, we just aren't locally aware of them. The phenomena in empty space that are relevant to us are radiations passing through, gravity passing through and geometry. Ultimately fooling with geometry brings us back to variable reality. It violates the logical rules of physics.

Believers have tried to convert terminology to support the big bang, saying expansion is not motion. But increasing separation is motion away and its measure is velocity. My biggest issue with cosmological redshift leading to universal expansion is that violates the known workings of gravity. How does expansion counter this force whose function is to bring together masses? Continually increasing velocity of departure without an internal motive force violates gravity! There is no known example of expansion, acceleration, or explosion that continuously increases the speed of ejection and correlates with expansion and the big bang theories. Constant acceleration doesn't exist, but the big bang theory relies on it and creates it by assuming the laws of physics changed. The strange work around has been to suggest the creation of gravity occurred at some later time after the big bang. To some extent mainstream science is supporting the religion of cosmological redshift because it is established in people's minds. This hinders consideration of new scientific logic that obeys the laws of physics.

Recent times have brought forth a variety of challenges to the big bang. Concepts which conflict with the big bang include gravity which always halts particle motion away from masses, infinite space, speed limit of light, and Halton Arp's findings about Quasars. Originally Quasars, which have very large redshifts were assumed to be

extremely distant and confirmation of expansion theory. But Halton Arp has detailed analysis that suggests much less distance for Quasars which in turn contradicts expansion theory.

The expansion of space is now described as the addition of space between but not within local solar systems and galaxies. Why accept two such different spaces? A two dimensional analogy is rigid dimes on an expanding balloon. But the dimes then aren't part of the balloon surface (ie of space). The many challenges have required legions of followers of the big bang to amend their theory with work arounds and invented concepts. These concepts include curved space, higher dimensions of space itself, dark energy, strange particles, membranes, time warp, MOND (modified Newtonian dynamics), and singularities. Taken together these concepts suggest a logic flaw in expansion theory, and together with Halton Arp's findings, cry out for action.

What follows argues that we need a more physically logical cause for cosmological redshift. The proven alternative source of redshift is gravitation. Can gravity be the cause? Have we been diverted from considering gravity as a cause of long distant redshift because the Schwarzschild redshift formula calculates a redshift maximized at a massive body surface? Consider that gravity is an effect radiated outward over spatial distances by the mass. Gravity extends over spatial distances as does the brightness of light from a star. Brightness of starlight is diminished by R^2 where R is the distance between source and observer. Yet we are able to see the star. Brightness remains over the vast distance of travel. Gravitation is also reduced by R^2 , so its effect must also reach earth. More importantly, its effect on something such as light making the trip from star to earth continues throughout the time of passage of light. Photons in motion have mass, and they are continually being acted upon by the gravitation of the source body. Gravity's effects over time must be summed in some way to determine the total effect upon radiation. Light beams from a distant mass are continually affected by gravity throughout their transmission. The red shift caused by gravity should gradually increase with distance, even though local gravitation provides a very large component initially. While the local gravitation at the source provides the intrinsic and often the major part of redshift, the secondary gravitation over distance, makes redshift distance dependent for similar sized bodies. This distance portion of gravitational redshift is currently attributed to cosmological expansion. Gravitation across space is a continuum. We don't have formulas for long term continuous actions of gravitation. Note that gravity mimics motion away. Relative to a distant observer, a distant mass would attract, and thus move away from the observer, particles near itself or between the observer and itself.

What is the relation between ongoing gravitation and particle separation? Particle separation equals a wave length and the time of passage is thus frequency. Frequency is a time denominated concept. It is measured by the observer. As mentioned before, for a light beam, the time of arrival separating adjacent particles is a function of both the speed of the beam carrying the particles and the distance separating the particles. Electromagnetic radiation is defined as having both a wave quality as well as a particle nature. Particles are easiest for us to comprehend. I specify a wave peak in a sine type of wave to be the particle—the photon. Changes in the separation of photons are stretching

(or squeezing) of the wave to change the displacement from one peak to the next. In our physics we relate the frequency directly to wave length because we accept the speed of light as being constant per special relativity. Actually light across the expanse of space can have a variable speed, less than C . I will subsequently explain equal periods of slowing of light followed by speeding up the light proceeding observation by the observer. In the end the observer will locally measure the speed C .

My proposed workings of gravitational redshift:

The basic concept is simple. Light launched from a star will be slowed continuously by its source as would any other launched entity. Because of the speed of light it would be very far away where we might detect slower speed. Gravitationally slowing light increases the red shift. But this gradually becomes offset by the pull of the destination mass speeding up the beam. While all this is happening, the beam is constantly stretched by the two masses, pulling in opposite directions, which increases the wavelength between waves/photons. This is our observed redshift and it increases with distance.

Let's pursue more detail. Existing gravity formulas, including Schwarzschild redshift, provide no means for summing up long term linear effects of gravity upon light. Linear gravitating effects do not converge to zero. But, since summing over extreme distances is too complex for mathematical formulas, the rapid local decline of gravitational effects means they are ignored at long distances. For example, the gravitational effect of the sun upon its light is orders of magnitude different from the first second to the next. But this geometric decrease subsequently levels out. The difference between second 500 and second 501 is insignificant. Clearly gravity is still acting at 500 seconds distance. That is about the distance of earth from the sun, and the sun's gravity continually affects earth. For redshift, how far away must gravitational effects be considered, and how can they be summed? The effects must be summed because they act continually on light beams. While local effects are viewed as huge relative to ongoing effects, sufficient distance can relegate the local effect to become a small portion of the whole.

We can discuss wavelength via analogy. Imagine shooting two bullets straight up with equal velocities in rapid sequence. The distance between the bullets is the wave length and the time measurement of this is the frequency. We realize that the bullets will follow identical paths and both reverse direction due to gravity at the same point. In effect, the first bullet is slowed by gravity first at every distance point while the second bullet remains closer to the gravitation source throughout. Being closer, the second should be slowed more at every time instant.

We're relating to time and distance. Which one do we measure increasing redshift relative to? This mixed relationship continues throughout the transmission of the two particles as they escape the local gravitation. The second bullet never catches the first one. However the speed of the two bullets will continue to slow. An observer at some great distance would note a smaller distance between the bullets but a slower travel time, and he may determine a similar

frequency as at the source. Even this relationship cannot continue indefinitely. At some point the slowing and the separating functions must diverge and affect frequency. One reason would be the existence of many other gravitation sources. The divergence leads to the slowing having more effect upon frequency than does the separation. This has been shown in the Pound Rebka tower experiment (see below). According to general relativity there is frequency shift which that theory defines as time dilation.

The universal relationship examined above is between a gravitation source, its radiation and a stationary observer. What changes if the observer is a gravitating body? The bullets will ultimately become incoming particles and the observer's gravitation will increase their speed. The observer's gravitation will also increase the separation as its gravity acts on the nearer first bullet more than on the second one. It is no longer possible for the frequency to remain unchanged. We can ultimately picture that throughout the transmission the two bullets lost then gained speed resulting in no velocity change. Meanwhile their final separation continues to increase. It is a function of the second bullet continually being closer to the source while the first bullet is continuously closer to the destination.

I referenced the contribution of the Pound Rebka tower experiment above. In the experiment, light sent down to earth from a nearby source is blue shifted to the observer. This can be considered accelerating the velocity of incoming light. In reverse it will decrease the velocity of departing light. Essentially the velocity change formula is $v=v*(1+gd/c^2)$. This experiment has the same two factors applied in opposite order as does the transmission between two masses. Across space light beam will slow, and later on speed up, arriving with the original speed C . The velocity formula will net to zero.

But between source and receiver across space the gravitation bodies are beginning and end points while the tower experiment has the mass at the center receiving and reflecting light. The beam will be stretched by the tandem forces of the source and the destination masses. Of two adjacent photons or wave peaks, one is closer to the source and the other closer to the destination throughout. This stretching produces redshift which increases somewhat linearly with distance. At the two end points the gravity is large but light speed diminishes the time. In the middle of the transmission the gravity effects are nominal but the velocity of the light could be very slow giving the gravity time to act. The current formula for redshift was determined by comparing redshift for sources at known distances. There being an approximate linear relationship, redshift is directly related to distance. The formula determined by working back from distance observation to determine redshift- Z is the Hubble formula, $Z=HD/C$, where H =Hubbles constant, D = the distance in mega parsecs, and C =the speed of light. This has subsequently been applied to all redshift sources and their distance determined by formula. If the relationship is not linear throughout, then assumed distances in the universe may be wrong. I cannot even suggest whether there is a linear relation to distance for very long transmissions using gravity redshift.

Gravitational redshift is also partly determined by the mass of the source. By extension, two different masses at the same distance produce different redshift while two

identical masses at different distances produce different redshift. This correlates with Halton Arp's findings and becomes the single solution that explains cosmological redshift varying by mass or by distance or both.

Frequency differences due to velocity change for light from the sun should be detectible at various distances from the sun. Identifying the redshift caused by stretching requires analyzing the beam throughout transmission, an idea clearly limited by enormous distances.

From this analysis I propose that cosmological redshift is not a Doppler effect or an expansion. Spatial redshift is due to gravity!

The universe is therefore static, and has no beginning or end. Orbital motions of all bodies relative to each other prevent collapse and provide equilibrium. Relative orbiting is the same solution Newton found for equilibrium of motions within the solar system. There is no need for motion away from any particular observer.

The observing gravitating body receiving redshift from stars is our sun and for galaxies is our galaxy. On earth we are a slightly off center component of the observer. As earth is not exactly the center of the observer, it may be possible that redshift from a distant star will vary, probably imperceptibly, depending on whether the sun is between us or behind us at the time of observation. The same can be said about galaxy redshift and the relation of the source galaxy to our galaxy center.

Some math of redshift

I mentioned that gravitation effects don't converge to zero. This statement reveals the real can of worms here. Though physicists require math statements to support ideas, extreme extended application of math equations always will fail. Math formulas correlate factors such as ideas/forces/matter/etc. The formula helps understand the relationships as quantities change. But extensive changes include bigger, smaller, farther away, more often, etc. Any or all elements can be extended to approach infinity or zero. In doing so the equation loses its value. Extreme relationships no longer relate in the same manner as the original. In one attempt to address this issue, physicists have invented the canceling of infinities. I suggest that newly defined concepts such as dark matter are conceived to overcome one or another extreme condition within a formula. Even given many forms of mathematical expression substitutions can only temporarily avoid the issue.

Supporting the idea that redshift is too complex to decipher in mathematical terms, I remind you that gravity is an all encompassing entity which provides different effects and is measured differently in various situations. Somewhat in order of development:

1. Gravity provides weight in the form of a significant mass attracting a nominal mass. The surface provides an end point/limit.

2. Gravity creates falling and a downward acceleration of the nominal mass. Landing at surface allows totaling.
3. Gravity can be offset/merged with sideways motion. Pendulum motion
4. Heavenly bodies attract each other gravitationally and a weight (mass) is assigned to each. The gravitational constant allows calculations.
5. Orbiting motion can continually offset gravitational attraction—Newton's formula. Consistent distances provides limit.
6. launching, from rotating planets, produces hyperbolic and elliptical curves. Rotational offset, geostationary coordinates aid relevant measure.
7. Multiple micro bodies relative to major gravitating body. Orbiting—used for docking. Multi body solar system problem.
8. Gravitational redshift of neutron star. One body, multiple micros-waves, little distance factor used. Schwartzchild' formula.
9. Multiple significant mass bodies; 2+ stars. Galaxies, big separations, multiple sources. Unmeasured distribution effects, difference with major and minor masses of solar system misunderstood.
10. Cosmological redshift by gravity. Fluctuating effect of departure from significant mass. Minimum separation of waves vs near infinite travel. Fluctuations with changes in speed and in separation.

Summation:

Perhaps the best way to sum up this perspective is to compare it with expansion theory. Here we accept the concept that light speed is not fixed, due to the influence of gravity, an idea which is also accepted by general relativity. But light has served as our yardstick of the universe. Physicists have depended on a fixed speed of light. Light serves as their yardstick of the universe. Shrinking the yardstick by slowing its motion equals expanding the region being measured by the moving yardstick. When it slows down without our realization, we convert the distortion of our measurements into the idea of space expanding. Essentially adding space or shrinking the yardstick yield similar measurements. It is the occurrence of redshift that informs us about the slowing of light. What matters is how we account for the situation. When will mankind accept that space is not expanding?

All beams of light are continually shifted throughout their passage across the universe so that at some distance the shift may exceed the visible red range, and the waves become infrared, microwaves, or radio waves. Appropriately, a microwave background is observed signifying an approximate distance from which all light is shifted beyond the visible. This background radiation gives the false impression of a boundary to the universe. No matter where an observer is within the universe, it appears bounded nearly equally in all directions. Olber proposed a paradox in which the night sky should be solid light from an infinite number of stars. He was in fact correct, however the light has been red shifted to become microwaves.

Halton Arp's findings indicate that there must be more than distance that determines cosmological redshift. There must be something intrinsic contributing which I have

suggested is the mass of the source. Using gravity redshift reveals that some intrinsic shift is due to mass, as known for neutron stars and black holes. Mass contributes as does distance, as explained above. While my theory is not dependant upon Arp's findings about quasars being correct, all other red shift theories fail if his findings are correct, which explains the slow acceptance of Arp's findings. I can relate Halton Arp's concept of intrinsic red shift with the source component of my gravitation red shift. According to Arp's observations, the "youngest" objects appear to have the highest red shifts even though they aren't as bright as their neighbors. Removing the Doppler Effect as the redshift source, he declared there must be an intrinsic red shift. He postulated that Red shift decreases as objects age. I noticed in his discussion that the younger bodies "congeal, separate, and become more condensed" objects as they age. Arp finds quasars that appear young and were probably born as ejections on either side of eruptive objects. At first these erupted objects have the highest red shifts. Gradually, he finds that these erupted objects increase in brightness and decrease in red shift. My view identifies cloud-like quasars as functionally denser than galaxies. I have reasons to find them dense. Using Arp's notion, being young, they are active. Active means they have spin. Spin is my determinant of density, and it causes the diminishment of gravitational push. To account for the lower brightness of quasars, the young clouds of quasars with high internal spin don't have proper mass elements to release photons to the onslaught of paeps, while older, denser clouds eject more photons and are thus brighter.

Strangely, modern physics assumes separate red shift causes in two separate situations. The red shift of Neutron stars is caused by gravity but galaxy and Quasar red shift is assigned to its "motion away," thus being a Doppler/expansion effect.