

Hubble's Failed Law

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Abstract

Hubble's law, the statement that galaxies are moving away from Earth at velocities proportional to their distance, is considered the ultimate defining evidence supporting the hypothesis that the universe may be expanding. Because of false assumptions, faulty reasoning, and data that may have been contrived, Hubble's law is fatally flawed. Edwin Hubble made the unwarranted assumption that nebulae are accelerating away from each other, then found the mathematics to prove his foregone conclusion.

Keywords: *Hubble's law; Galaxies; Universe; Hypothesis; Wavelength*

Introduction

Hubble's law is the theory that galaxies are moving away from Earth at velocities proportional to their distance [1]. Galaxies are supposedly accelerating away from Earth and the farther they are away, the higher their velocities. The calculations from which Hubble's law is derived indicate a distance-velocity relationship considered to be ultimate definitive evidence supporting the hypothesis that the universe may be expanding.

Because of false assumptions, faulty reasoning, and data that may have been contrived, 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 conclusion. 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 Redshift Misconception

In 1915, Vesto Slipher observed that light from some spiral nebulae is redshifted and jumped to the conclusion that what he was witnessing was a light source rapidly moving away from the observer and somehow stretching the wavelength of light it emits [2]. Slipher also

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observed that light received from Andromeda was in the blue part of the spectrum and falsely concluded that this galaxy is somehow shrinking the wavelength of its light as it rapidly approaches us.

Slipher did not appreciate how light attenuates and thought he was witnessing a Doppler effect. In redshift there is an actual increase in wavelength. In Doppler there is only the illusion of change in wavelength. Redshift is attenuation; Doppler is distortion [3].

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 elastic medium through which they travel (e.g., air, water, solids) [3].

Light attenuates over extreme distances through space, meaning that its frequency gradually decreases as its wavelength correspondingly increases. The degree to which light has redshifted is a function only of how far it has travelled from its source. That redshift could have anything to do with motion of source is a false inference.

In 1927, Edwin Hubble compounded the Slipher error by presuming that galaxies are receding from the Milky Way and the farther away they are, the faster they are receding. Hubble estimated presumed radial velocities of 46 star clusters on the unwarranted assumption that that they were travelling on straight line paths diverging from some unexplained central colossal explosion [3,4].

Edwin Hubble's Miscalculations

In 1929, Edwin Hubble presented data from 24 star clusters he had studied as the foundation for Hubble's law, which theory is considered the ultimate observational basis for expanding universe theory [5]. From these 24 sets of data, Hubble selected five that demonstrated a perfect straight-line relationship between distance and velocity. However, five is a statistically insignificant sample size from which to project meaningful data about the entire universe [4].

Hubble demonstrated selection bias by using data only of galaxies from which light was redshifted and overlooking data of galaxies from which light was blueshifted (e.g., Andromeda, M86, M90, M98) [4]. By ignoring data which suggested some galaxies might be approaching Earth, 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.

In 1912, Henrietta Swan Leavitt had discovered a direct relation between the brightness of Cepheid variable stars and the period of their pulsations [6]. This brightness-periodicity relationship tells us at what stage each Cepheid may be at in its unique life cycle and absolutely nothing about where said star may be located. Hubble misinterpreted the Cepheid brightness-periodicity relationship to his advantage. By presuming that the universe had begun from some unexplained central explosion, Hubble jumped to the unwarranted conclusion that the brightness of a Cepheid star is a function of its distance away from Earth [6].

Hubble also falsely assumed that all galaxies are approximately the same size. This simplification caused him to overestimate the distance of small galaxies and underestimate the distance of large ones [4].

Hubble further falsely assumed that the dimness of a galaxy is a function of its motion away, i.e., that as a galaxy retreats, its brightness diminishes [4]. This is another example of including one’s conclusion in the assumption, then using this assumption to prove the conclusion.

The following (TABLE 1) 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.⁴ 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 1. Edwin Hubble’s estimates of distances and velocities.

| Cluster Galaxy | Distance-EH (ly) [5] | Presumed Velocity (km/s) [5] | 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 a graph (FIG. 1) to create a remarkably tight straight-line relationship between the distance of a galaxy and how fast it is supposedly moving away.

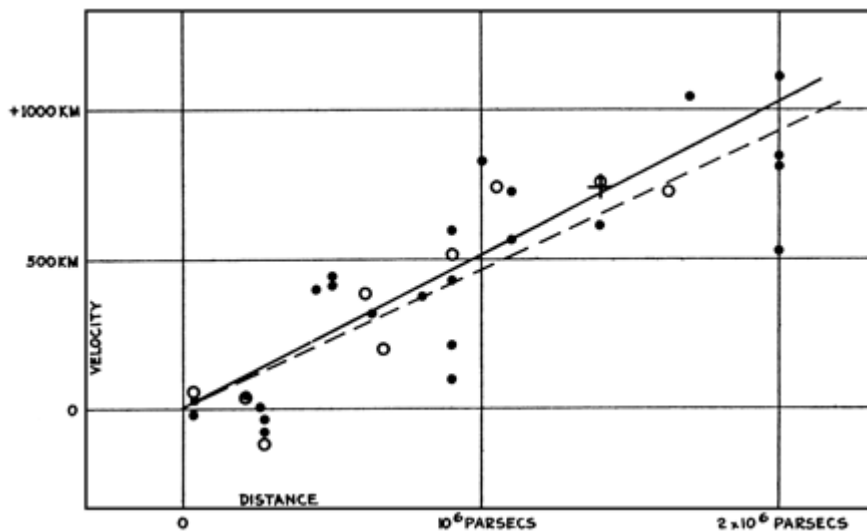


FIG. 1. Straight-line relationship between the distance of a galaxy and how fast it is supposedly moving away.

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 [5]. Data in the “Distance-Modern” column are published data sourced from the Hipparcos Catalogue of 188 218 (TABLE 2).

TABLE 2. Edwin Hubble’s estimates of distances and velocities.

| Brightest Star | Distance-Modern (ly) | Distance-Hubble (ly) [5] | Error Factor |
|--------------------------------|----------------------|--------------------------|--------------|
| Spica (Virgo) [7] | 262.19 | 78 | (-3.4 x) |
| Alioth (Ursa Major) [8] | 80.93 | 1,000 | 12 x |
| Alphecca (Corona Borealis) [9] | 75.05 | 1,400 | 19 x |
| Arcturus (Bootes) [10] | 36.72 | 2,500 | 68 x |
| Alphard (Hydra) [11] | 180.3 | 3,960 | 22 x |

Edwin Hubble thus estimated Virgo to be about 3.4 times closer than it really is, and the other star 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. It appears that Hubble may have manipulated 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. This burden of proof is the same as required in a court of law. The Hubble theory that galaxies are moving apart cannot be substantiated; therefore, we must presume that they are not moving apart.

Hubbles’ “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 [4].

Tolman Surface Brightness Test

We now have direct evidence that the universe is not expanding. Edwin Hubble’s estimates of velocity did not include measurements of surface brightness (i.e., brightness per unit area) of galaxies. Such measurements tell a quite different story.

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 [12].

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, 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 Slipper 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 were moving away from each other, they would appear fainter the farther away they get, i.e., their surface brightness would diminish. Lerner's team, however, 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. Thus, there is zero tangible evidence that galaxies are moving apart and overwhelming evidence that they are not [13].

One thousand galaxies in the Lerner study is a statistically significant sample size 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.

Conclusion

Because of false assumptions, faulty reasoning, and contrived data, Hubble's law is hereby invalidated. There is neither logical reason nor substantiating evidence to indicate that the universe could be expanding, i.e., that galaxies are moving apart from each other. Application of the Tolman surface brightness test to 1,000 near and far galaxies gives us substantial evidence to indicate that galaxies are not moving apart, that they are in the same positions relative to each other that they have always been in.

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