

CHALLENGING THE BIG BANG THEORY

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Edwin P. Hubble and Milton Humason formulated, in 1929, the Hubble Law whereby a redshift occurring of more distant starlight is a constant, now known as the Hubble Constant. Two explanations of it were given. One explanation is according to the Doppler Effect whereby a redshift occurs of a recession between the observer and the light source. Because it is assumed the redshift increases with distance, it is theorized the universe is finite and expanding. By the other explanation, as was proposed by Nobelist Fritz Zwicky at the time, light loses energy as it propagates through space. It is known as Tired Light.

Tired Light was discarded in favor of the expanding universe, now known as Big Bang, because observational data at the time was believed to be more consistent with a Tolman Brightness Test. Accordingly, because starlight takes time to reach the observer, the light source and its distance is of the past, when it was closer, such that it should appear bigger and brighter than from where it is now. To the contrary, according to Tired Light, the light sources are, on the average, the same as where they emitted light. However, if loss of energy is in proportion to light energy, as measured according to frequency, then the calculation of distance also differs.

In the 1990s, the data began to indicate that the universe is not expanding at a constant rate. Also, in 2009, Eric J. Lerner of the Lawrenceville Plasma Physics Inc., USA, published an article titled Preliminary Results Challenge the Expanding Universe Model. The result has been a modification of Big Bang whereby the universe is now assumed to be expanding at a faster rate than in the past. To explain how this increased rate of the Hubble Constant is possible, its cause is further assumed to somehow be that of the existence of "dark energy". The universe is further assumed to be about ninety

percent dark energy and about five to six times more “dark matter” than regular matter.

Why the universe is now assumed to be expanding at a faster rate is because the Hubble Constant more towards the edge of the universe is less than as determined of stars within and closer to our Milky Way galaxy. This observation turns out to be consistent with Tired Light with no need of modification. If the change in redshift of light energy decreases in proportion to its energy, then the change is greater at closer distances where starlight energy of similar stars is relatively greater.

There is further issue regarding dark matter. As early as 1939 Horace Babcock noted a discrepancy in the rotational speed of the Andromeda galaxy. In the 1970s and 1980s, a general study of the galaxies under the guidance of Vera Rubin indicated that rotational speeds of stars in spiral galaxies, including our Milky Way, do not appear to decrease according to Newton’s inverse-square-law. The rotational speeds are constant with distance instead of decreasing with distance. To explain this apparent violation of law, dark matter is assumed to exist within galaxies. It differs from ordinary matter in that it neither emits nor reflects electromagnetic energy, as for it to be invisible except for gravitational effect.

The assumption of dark matter has been challenged. Mordehai Milgrom proposed a modification of Newton’s inverse-square-law of gravity in 1983, referred to as MOND. In 2004, a relativistic version of the modification according to space-time curvature was offered by Jacob Bernstein. In 2008, the book *Reinventing Gravity* by John W. Moffat was published, referring to the modification of gravity, as MOG, whereby the gravitational constant relatively increases away from the center of mass due to greater decreases in repulsive force away from the center of mass.

A variable constant of gravity is an alternative to assuming the existence of dark matter, but neither dark matter nor modification of theory is needed in view of Tired Light. The dust clouds and gases within the spiral arms of galaxies forming new stars could indicate the presence of unobserved-ordinary-matter. In further support is a redshift periodicity, or quantization, within particular clusters of stars and galaxies. This discovery by William G. Tifft was published in 1976 and 1977. His findings have been supported by observations of other astronomers, but they have generally been explained away as lumpiness of Big Bang during its early beginning.

Because redshifts appear greater than normal in front of some galaxies, it is now assumed the galaxies are somehow squashed in the radial direction of observation, whereas a tired light explanation could simply be that there is indeed the presence of matter that has not been observed, as plasma absorbing starlight energy. By Tired Light, the Hubble Constant need not be constant; rather, it appears only constant on the average.

Another reason given for the dismissal of Tired Light has been the observed clarity of the distant stars. It is argued the medium of space absorbing the light energy should alter visibility of the source. Counter arguments have been made and dismissed. One dismissal of an argument by another Nobelist, Albert Einstein, was part of a pilot wave theory in view of Maxwell's theory of electromagnetism in that photons are the guidance of a packet of waves. It relates to a particle-wave-duality explanation as proposed by Louis de Broglie and other physicists.

Maxwell explained the process of electromagnetic propagation as conditional to space alone, as not a part of any physical medium, but observational clarity is also evident of electromagnetic energy passing through the atmosphere and cables, as for television. For explanation, it is here given according to a right-hand-rule.

The right-hand-rule explains why two parallel wires, as Ampere discovered, contract if electric currents flowing through the cables are in the same direction, whereas they repel if the currents flow in opposite directions. It is according to the polarization of magnetism wherefrom induction of electricity occurs. Magnets are bipolarized wherefrom like-poles repel and opposite poles attract. If a magnet is divided into two or more parts, each part is still of opposite poles. A change in magnetic strength induces an electric current flowing in a wire. If the flow of current is circular, it induces a magnetic field. Electromagnetic waves are a continuation of electromagnetic fields, In short, the flow of current and the electric and magnetic fields are all perpendicular to each other in manner of the directions in which the hand and thumb point and the fingers curl. The opposite poles of magnetic effect from currents flowing in the same direction thus align closer to each other to attract, whereas like poles align by the currents flowing in the opposite directions for them to repel.

Significantly, individual arrangements of bar magnets do not change as long as their medium of propagation is in balance, even though the energy for propagation either increases or decreases. As has been here previously noted, Maxwell explained the process of

electromagnetic propagation as conditional to space alone, as not a part of any physical medium. Starlight being electromagnetic waves of energy can thus exist as bar-magnet-packets maintaining individual images while losing energy as they interact with a virtual field of energy from which they propagate as wave action through space.

Tired Light is not only explainable in a manner consistent with existing theory; it also provides a means of explaining gravity itself as a long-range-recycling-vacuum-effect. The minute loss of energy provides a long-range effect from the vacuum effect in the wake of emitted radiation whereby long-range-actions are considerably less than such other energies of the atom as electricity and the strong nuclear forces. For instance, energy lost at a distance equal to the diameter of the hydrogen atom, as per light speed, equates to the ratio of gravitational to electrostatic energy of the hydrogen atom.

All of this and much more is explained step-by-step in historical and simple mathematical detail in my book EXPLAINING GRAVITY AND HUBBLE COSMOLOGY. It is now in the publication process to soon be available for purchase.