ANOTHER CHALLENGE TO

BLACK HOLE THEORY

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Black Hole Theory is a singularity condition derived from Einstein's theory of General Relativity by Karl Schwarzschild (1873–1916). Einstein initially opposed its interpretation, but he only proposed, as an alternative, there being the possibility of a counter force, as by means of mathematical integration. However, his proposal was not accepted due to observational discovery of redshift in starlight per distance being consistent with the Doppler principle whereby more reflection of energy occurs between masses approaching each other. More favorable was Big Bang theory whereby all mass in the universe exploded as a tiny speck in space. However, there remains a general paradox of Black Hole theory of the singularity, and its rebuttal is here explained more in detail instead of just by mathematical integration.

The general paradox is mainly due to increase in light speed resulting in mass becoming of zero length within an infinite time interval, indicating mass-energy decreases to zero instead of increasing to infinity. An indication of the Schwarzschild metric, as part of its solution, is of light speed slowing to one-half light speed if escape-speed-squared equals light-speed-squared. Its indication is explainable according to how more loss of mass-energy than gained occurs above the one-half light speed upper limit. Further explanation is according to consistency in interrelation between gravity and relative motion. Such explanation involves difference in light speed slowing within a gravitational field but not according to relative motion. There is also a distinction to be explained as to why the one-half light speed condition is according to gravitational escape speed squared instead of just escape speed itself.

According to the Schwarzschild metric, the one-half factor in the relativistic factor squared relates to velocity squared in proportion to light speed squared. The square-root of one half is about seven-tenths as much instead of one-half as much. Its increase in value results because the fractional value of numbers multiplied by the same value increases the denominator more than the numerator. However, the one-half factor is also unique regarding interrelation between escape speed and orbital speed. Greater escape speed than orbital speed is according to the latter being multiplied by the square-root of one-half. The former squared is thus twice as much as the latter squared, such that the one-half light speed condition relates indirectly to orbital speed.

Of further note, orbital speed is also slower by the same relativistic factor squared. However, slowness of light speed and orbital speed observances are both locally nullified by the relativistic factor squared due to local observers' clocks being slower by the relativistic factor along with their measuring rods being shorter by it. Orbital speed is thus locally perceived as one-half light speed and one-half light speed is locally perceived as light speed in compliance with the principle of covariance of Relativity theory.

How does relative motion comply in consistent manner?

Einstein's formulation of Special Relativity includes internal energy mc^2, but how such tremendous internal energy of mass m moving at light speed c is contained was not explained. If containment is by means of radiation, then the containment radiation needs to be contrary to the Doppler principle whereby reflection of radiation moving opposite to relative motion has more impact than radiation moving in the direction of relative motion. According to conservation of momentum, relative motion would then be slowed for its non-continuance in open space being contrary to theory.

Contrary to the Doppler principle is the Higgs' mechanism whereby light can be either massless or massive in manner of ocean waves being massless by not changing momentum of the surface area they pass over, but being massive if encountering something else floating on the surface.

Waves superimpose to become mass. They can be maintained by means of containment radiation of more waves. Such superimposing in manner of becoming mass energy is itself complex with numerous possibilities. As for more detail, radiation superimposing into internal mass energy mc^2 is in relation to being maintained in opposite directions by kinetic energies $½mc^2$ of momenta each of mc. For relative motion to maintain, it is assumed equal reflection occurs in opposite directions for kinetic energies to combine as mc^2. Examples here proposed are with regard to one-half, two-thirds and one-third light speeds comparable to mass relatively at rest.

Consider mass m to be moving at speed c/2. For momentum conservation of containment radiation to apply, the same amount needs to be reflected in opposite directions due to moving in opposite directions at the same speed. It results as such if half the amount of containment radiation from the opposite direction of relative motion is able to superimpose through the mass. Moreover, since numerical difference in speeds between containment radiations and mass are $(1 + ½) – (1 – ½) = 3/2 – 1/2 = 1$, as representative of mc. To the contrary, differences regarding one-third light speed and two-thirds light speed are, respectively, less and more than mc: v as 2c/3 calculates in the manner $(5/3) – (1/3) = (4/3)$, and v as c/e calculates in the manner $v = (4/3) – (2/3) = (2/3)$. Internal light speed momentum and energy of mass is therefore only maintained for relative mass speed being one-half light speed. More energy is lost than gained above this additional limit.

With mass moving at one-half light speed, there is less energy of light moving back and forth in the direction of relative motion in accordance with the relativistic factor squared in the manner: $c' = c(1 – ½) = c/2$. It is thus mathematically consistent with the Schwarzschild singularity condition, as are the other speeds. Further implication is that there is more energy lost than gained above the one-half light speed upper limit. (As why kinetic energies in opposite directions are subtracted instead of added, it is because the subtraction relates directly to the superimposing of radiation through the mass being negated.)

Further consideration is that reduced light energy from increase in either gravity or relative motion is that of light converting to gravitational effect in being of less internal mass energy for vacuum effect to occur. Although electromagnetic charge is much greater than gravitational force, there is the principle of covariance whereby local observation of relativistic change by either relative motion or gravity is of the same magnitude for electromagnetism, the quantum and so forth.

There has been electromagnetic formula proposed in relation to an upper limit of electromagnetic scattering, such as by Joseph John Thomson (1856–1942) and J. Lamor (1857–1942). They relate to the acceleration of electric charge as two-thirds the product of electron mass m_e, its radius r_e, and acceleration squared a^2 per light speed c. The ratio 2/3 multiplied by a relativistic factor squared for a velocity of one-half light speed calculates as $(2/3)[1 – (1/2)^2] = (2/3)(3/4) = 1/2$.

Further consideration is according to how containment radiation is either visible or invisible at the atomic level. There is matter and antimatter for conversion into other particles of mass and radiation. It could be the difference between visible and invisible radiation occurring in accordance with particular

circumstances. For instance, converting to invisible radiation could also result in vacuum effect with the condition of it being able to convert back to visible radiation. It could then gradually recycle back in manner of the process being slower at longer distance in comparison to electromagnetic charge as a more energetic process upon its shorter and more direct process. It could be more consistent with Tired Light theory than Big Bang theory regarding Tired Light theory being a gradual reduction of light energy per distance. Invisible radiation as vacuum effect could also merely be classified as gravitons taking over space both within and between accumulated masses. Simply stated, light merely converts to gravity by means of vacuum effect.

This invisibility condition is also somewhat more consistent with the proposal of dark energy and matter for explaining inconsistent observation of cosmology being of less mass needed in compliance with Newton's inverse square law. Dark matter and energy have also been proposed for explaining an inconsistency of an expanding universe supposedly determined to be at a faster rate of expansion than it had been in the past. Furthermore, incandescence of light at higher temperature is part of the historical development of quantum theory.

Further consideration is to interrelate with electromagnetism in the since of slower light speed of less energy being converted to gravity. Even though electromagnetic force is much greater than gravity, there is the relativity principle of covariance whereby all changes occur the same in order to appear the same as being relatively at rest in gravitational free space. Change is thus the same whether of gravity, relative motion, electromagnetic action, or quantum action.

Joseth John Thomson and other physicists proposed an internal mass energy formula in relation to electromagnetism as $2e^2/3x = m_ec^2$. Multiplied by the relativistic factor squared as $[1 – (1/2)^2] = (3/4)$, the (2/3) ratio becomes (1/2), as for the one-half upper limit to apply to electromagnetism as well with regard to the Coulomb force being consistent with Newton's inverse square law of gravity.

Further speculation is according to how containment radiation at the atomic level is either visible or invisible. There is matter and antimatter for conversion into other particles of mass and radiation, such that variance could include visible and invisible radiation converting in manner of vacuum effect. It could merely be invisible radiation being allowed to escape and gradually convert back to visible radiation for gravitational effect being its visible effect less than that of electric charge.

Further noted is cosmic observation of spiral galaxies has been inconsistent with both Newtonian Mechanics and Relativity Theory for more than a century. Even Big Bang Theory has resulted in need of further explanation as indicative of cosmic observation. Dark matter and energy have been assumed for such explanation, which could also be consistent with incandescence being part of historical development of Quantum Theory, which now includes antimatter articles, and John Tyndall (1829–1893) measured difference between temperature and amount of radiation emitted of an electric current through a platinum wire. A particular ratio in accordance with absolute zero was calculated by Joseph Stefan (1835–1893) to be according to the fourth power. Similarly, atomic mass density of the proton to the electron is of the fourth power. By both electromagnetism and quantum theory, electric charge is the same per more mass and less radial length. Since volume is per cubic radius, it plus more mass per radius is to the fourth power.

Another possibility to consider is that dark matter is due to internal radiation of light energy being more invisible consistent with the Higgs mechanism.

How, then, can quanta exist as either matter and antimatter of the same primary magnitude, and how does electric influence be either of positive or negative charge whereby they either repel if being of the same charge or attract if being of opposite charge? Possible explanation includes Boyles Law and the principle of covariance regarding the historical development of quantum physics.

A heat-light connection was developed by Andre-Marie Ampere (1775-1836) and Marcedonio Mellioni (1798-1854) as waves propagating through a media named ether even though experimental evidence indicated no essential difference in wave properties, but refractive properties of thermal radiation were discovered.

Experiments by Jean Bernard Leon Foucault (1819-1868) and Armond Hippolyte Louis Fizeau (1819-1896) confirmed wave properties of radiant heat by means of splitting rays of infrared light for allowing them to superimpose in producing alternating bands of hot and cold in analogy to light and dark fringes of ordinary light. James David Forbes (1800-1861) then discovered heat polarizes similar to that of light, and he advanced a concept of continuous radiation spectrum being consistent with the theory of electromagnetism proposed by James Clerk Maxwell (1831-1879).

Leonard Euler (1707-1783) proposed a particular substance of mass can absorb light of any frequency that its smallest particle is able to vibrate. More development of theory was according to how matter can absorb light. William Wollaston (1766-1825) discovered light spectra emitted from matter includes dark lines. It was eventually explained how atoms absorb waves of light according to resonance. It had become evident that poor absorbers of heat are poor emitters of it and good absorbers are good emitters, such that what is emitted is the same as absorbed within an equilibrium state of existence. Gustav Kirchhoff (1824-1887) proposed in 1859 a particular condition of “black-body” radiation applies to all bodies regardless of their material composition.

It is assumed systems obtain a state of thermal equilibrium at a sub-temperature below incandescence. If X denotes the total radiation per surface area on each body of mass, and x is the fractional amount of radiation actually absorbed, and E is permissible radiation emitted, then the result is mathematically expressed as either $Xx = E$ or $X = E/x$.

The study of temperature and light intensity by John Tyndall and Joseph Stefan of an electric current through a platinum wire resulting in heating the wire to a state of incandescence was found of different measure of temperature to be about twelve times greater with difference in temperatures of 1,200 degrees centigrade and 525 degrees centigrade. Added to the calculation is 273 degrees centigrade to both 1,200 and 525 centigrade degrees, and their ratio is also to the fourth power consistent with how mass density of the proton to the electron is to the fourth power.

Still, how can there be both matter and antimatter of the same mass energies?

Shorter waves are considered more energetic because of them allowing for more internal action per time. However, shorter waves could also be able to escape more easily. It is also possible longer waves could gradually be divided into shorter ones in maintaining constancy of internal energy. Perhaps there is variance in exactly how this constancy is maintained. Such variance could thus be at odds with itself in having variance effect with other mass. Two opposite effects of a more general equilibrium state could thus be possible whereby escaping waves either superimpose for invisible effect or condense for more presence of outside force.

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Also noted is that Einstein received the Nobell Prize for his support of interpretation of wave theory of quantum physics according to its probability condition even though his proposal of a counter force was not generally accepted.

Although the above analysis resulted from my effort to further my education from further study of the historical development of theory, there is still a lot more to resolve, and my gravity book which has had continuous rewrites has merely provided the clues presented above. Suggested for advanced learning is a book written by a physicist of the name Harold Aspden who lived during (1927–2011). His last book titled Physics United and published in 2016 is consistent with the historical development of theory and includes a one-half light speed condition along with interrelating gravitons with electromagnetism and of deriving the fine structure constant whereby electron orbital speed is about 137 times less than light speed.