

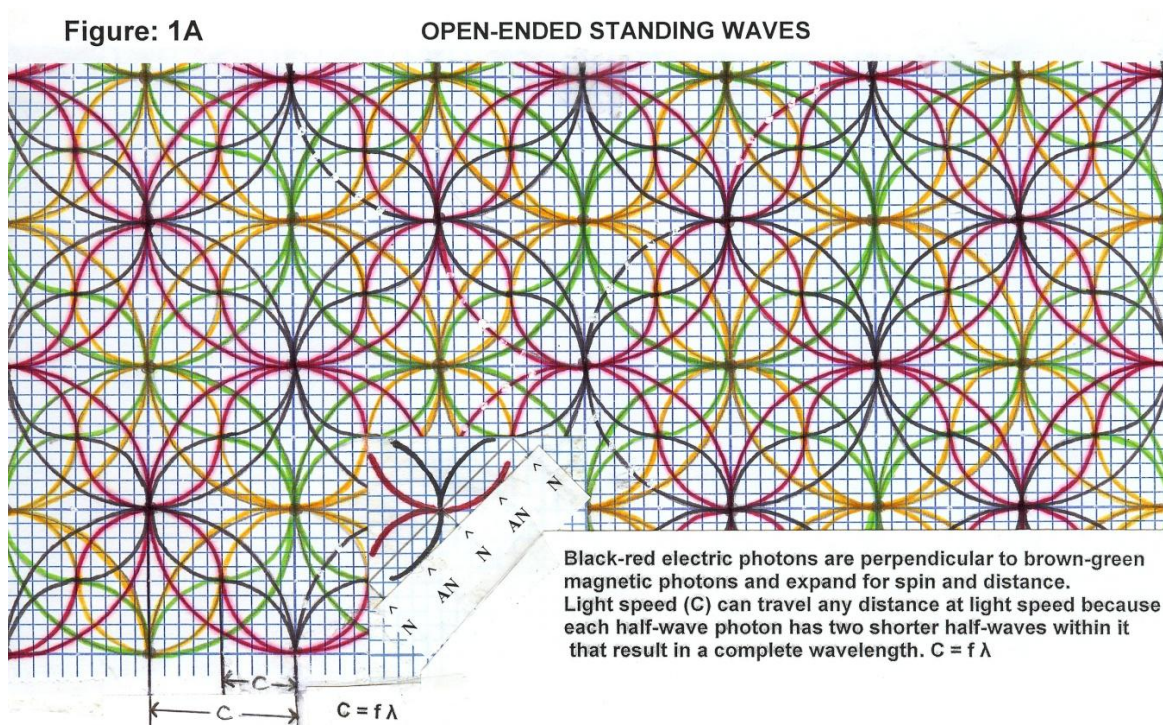
Electromagnetic Waves

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Abstract: Space is from two kinds of energy in standing waves; (1) energy with mass which is finite energy and (2) energy without mass which is infinite energy. Given light speed is equal to frequency times wavelength $C = f \lambda$ then photon half waves are twice light speed on contraction before reversal expansion at light speed. Light speed is a constant relative to mass in Special Relativity but photon half waves are twice light speed on contraction from the fundamental frequency. Infinity is half wave photon energy on contraction at twice light speed without mass-time. Standing half wave photons are oscillating as standing medium (ether) at twice light speed where the energy is infinite without mass; consequently, the amplitude of the standing waves in full wavelengths are travelling at light speed with the energy of created mass and time.

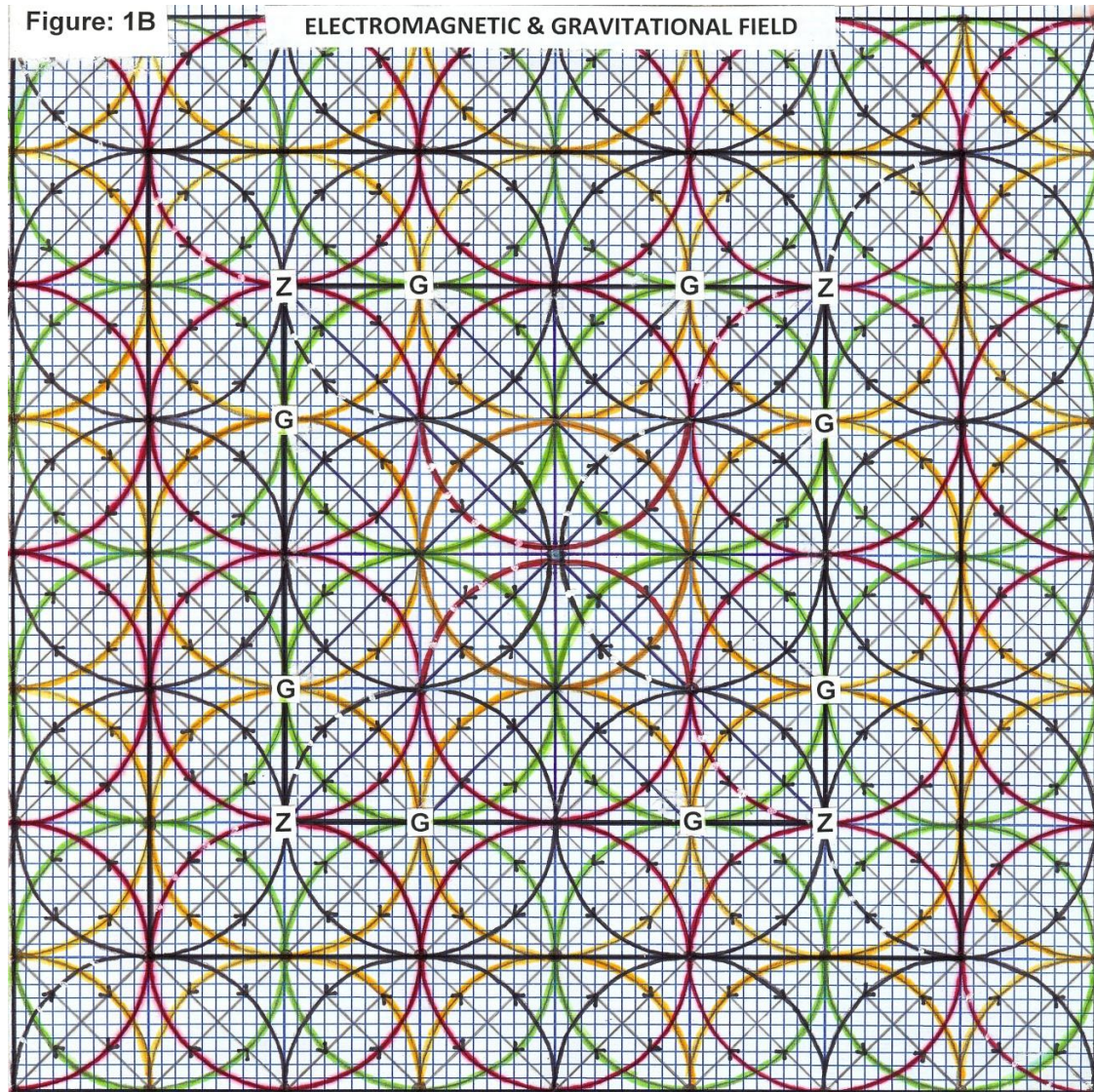
1. Introduction

Light speed is a constant on complete wavelengths; therefore photons are twice light speed on half waves. Photon half waves have twice the energy on contracting harmonic oscillations and energy at half harmonics on reversal expansion where each photon is comprised of two shorter half waves within for a complete wavelength. In Figure 1A, half waves are open-ended where anti-nodes are in the middle and nodes at the ends such that each half wave is multiplying into full waves. Black-red electric are transverse waves perpendicular to brown-green magnetic waves. The wavelengths are getting shorter at twice light speed on contraction and longer on reversal expansion with the force of two shorter waves within each half wave at light speed. Photon half waves are twice Planck's constant on contraction having very high energy levels creating mass on reversal expansion. Photon half wave energy on reversal creates mass in the apex of a quantum cone in the electric field.



2. Report

Figure 1B below depicts standing waves on reversal where mass is created from photon energy at twice light speed. Moving two half waves from center in direction Z and squaring, there are four complete green magnetic circles in the square. Moving three half waves from center and squaring, there are nine complete brown magnetic circles in the outer square and so on at the inverse-square distance from center. The square of the distance is from mass center with the four corners Z. Atom mass at center in the electric field square Z coupled with momentum G in the magnetic field is distance and gravity after breakout from a quantum field cone. The EM wave is comprised of photon energy. Black-red electric photons and brown-green magnetic photons are perpendicular to each other with the black-red propagating in direction Z and brown-green magnetic photons propagating in direction G. If the black-red electric photons are on the Y axis propagating in direction Z, then the brown-green magnetic photons on the X axis are propagating as circles of momentum in direction G with the electric photons in direction Z. The magnetic field photons in axis X rotates in direction G inside the electric field photons in axis Y moving in direction Z. Photon waves in the magnetic field interact with photons in the electric field at the inverse square distance from mass center.



In Figure 1B above, it's the magnetic field photons in G rotation coupled with the electric photons in Z direction that needs clarity. Start with the upper left corner of the Z square to see how the G photons move from all four sides of the square that form a circle inside Z direction photons. Similar to Faraday's Law of induction, the magnetic field photons moving in a circle in direction G will cause a current inside the electric field photons that move in direction Z when there is a change in the EM field. For an increase/decrease in amplitude of electric photons "moving" in direction Z, the magnetic photons will be out of phase as antinodes with an attraction force at the nodes of the black electric positive and red electric negative. The diamond-squares (rhombus) field background in Fig. 1B above show half wave adjacent sides of a rhombus to be electric waves while the opposite sides are magnetic waves 180° out of phase inside the electric waves and 90° out of phase with the electric waves perpendicular in direction Z.

From direction of arrows in Figure 1B, the black electric and brown magnetic are circular and sine waves while the red electric and green magnetic are only sine waves. Quarks deep in the apex of a right circular cone include the black electric circular waves, the black electric sine waves and green magnetic sine waves as the proton while brown magnetic circular waves, brown magnetic sine waves and red electric sine waves are the neutron. Gluons are the amplitude of half waves and much stronger in the cone apex holding protons and neutrons together. Beta decay is interaction of black-red half waves between protons and neutrons. Electrons continue on an outward spiral from the quantum cone base where amplitude of red-brown electrons and black-green positrons interact with the brown-green photons. [The e coupling constant as the inverse of its square: about 137.03597 is the amplitude for a real electron to emit or absorb a real photon.][1].

The three spatial dimensions of mass plus light and gravity are relative to mass-time .Mass-time is a consolidation of moving energy while distance is a derivative of wavelength and speed a derivative of rotating frequency G in the magnetic field. Mass in the electric field already includes part of the magnetic field as subatomic gravity forces; the remaining magnetic field spectrum is light and gravity on mass, the remaining electric field spectrum not subject to light and gravity is dark energy. [A star is formed when a large amount of gas (mostly hydrogen) starts to collapse in on itself due to its gravitational attraction.][2].

Mass as finite energy is receding due to expansion in the field evidenced by the redshift and distance. Matter can neither be created nor destroyed because the mass-energy equivalence is finite at light speed but the universe is infinite at twice light speed where finite energy is created as mass and time. Mass-energy equivalence is an equal function where mass is not the same as energy but equal to it when finite. The link between infinite and finite energy is twice light speed and a universe without a beginning is a universe without mass-time. Standing half wave photons are ether at twice light speed on total contraction that permeates everything as medium. It follows from the wave nature of energy at twice light speed that nothing finite exists on contraction but for mass-time created from it on reversal expansion.

Photon waves and mass is finite energy and the orbital path of mass is gravity in general relativity. [Space-time in general relativity is not flat but curved by the distribution of mass and energy in it.][3]. Photon packets of light speed energy in the magnetic field are graviton attraction on mass in the electric field that curves the field spectrum in general relativity. Standing half waves in quadrant form are photons of ether energy at twice light speed on contraction and on reversal expansion each photon half wave is comprised of two shorter half waves within for a complete wavelength at light speed. A metaphor to motion-picture theater: the screen is the universe, the pictures are the stars and galaxies and the projector is energy at twice light speed. We come from finite energy and see the pictures in mass-time.

3. Conclusion

Extended Equation: $E = ZG^2$ where ZG^2 is half wave photon energy on contraction before photon reversal in the EM field. This is twice Planck's constant: $E = 2(hf)$ at twice light speed on contraction. Photon energy by itself can travel any distance at light speed in Special Relativity and is timeless without mass. In Einstein's $E = MC^2$ if we take mass out of the equation then E is equal to C in full wavelengths but in the original half wave contraction mode E is equal to $2C$ as infinite energy without mass and time. Time is not another dimension but rather mass itself in the electric field driven by momentum of gravity in the magnetic field. Everything in the expansion mode is finite energy having mass in the electric field coupled with momentum of gravity in the magnetic field. Circular momentum G in the magnetic field is gravity force attraction on mass in the electric field at the inverse square distance with respect to the two fields on expansion mode.

Gravity is equivalent to the accelerating circles G which are out of phase with mass. Gravity forces are very weak because photon anti-node forces in the magnetic field are out of phase with mass anti-nodes in the electric field. When mass energy don't exist (0 at the nodes in the electric field at light speed), then gravity exist in the magnetic field with the full force equal to mass energy but when mass energy do exist (1 at the anti-nodes in the electric field at light speed), then gravity force in the magnetic field is very weak when out of phase with mass in the electric field. This brings to mind Heisenberg's uncertainty principle where the standing position of the electron in the electric field cannot be measured simultaneously with momentum in the magnetic field. The reason is because the two fields are reciprocal of each other at light speed. Mass as a reciprocal of gravity is outlined as follows:

$E = M C^2$ (From photon reversal expansion in the EM field).

$1 = M C$ (Electric Field "C" times Magnetic Field "C" = $C^2 = 1$).

$C = \frac{1}{2}m$

$G = \frac{1}{2}m$

In summary, standing EM half waves on contraction at twice light speed with the same amplitude out of phase will reach a point that will reverse into expansion due to the square of the distance getting stronger. Half wave standing photons are space medium at twice light speed while full wave photons having two shorter half waves within after reversal are linked to mass as finite energy. Finite energy having a beginning from light speed energy came from infinite energy without a beginning in quadrant formation. Time exist as mass coupled with light and gravity. Distance does not require momentum but momentum requires distance in special relativity. Mass curves the magnetic field in general relativity and mass moving in the magnetic field is mass-time. Gravity in the magnetic field rotates out of phase in the electric field. The on/off switch between the magnetic field and electric field is at light speed.

References

- [1] Feynman, R.P. (1988). *QED The Strange Theory of Light and Matter*, Princeton University Press, p129.
- [2] Hawking, S. (1996). *The Illustrated A Brief History of Time*, Bantam Books, p105.
- [3] Ibid, pp 40-42. General Relativity background field in Figure 2.16 p41 is similar to diamond-squares (rhombus) background in Figure 1B above.

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