

# Origin of Matter and Time

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**Abstract:** Standing half wave photon energy at twice light speed comprise a static universe where two transverse fields  $90^\circ$  out of phase are the square of distance from each other. The universe has a standing concept of time since the infinite universe is a static universe without a beginning or end. The square of distance is a point of reversal in expansion-contraction between the fields as a means to conserve energy, thus: expansion of photon energy in the electro field creates matter while contraction in the magnetic field creates light energy and gravitational pull toward higher frequency. Also, the universe with matter has a moving physical concept of time on expansion-contraction at light speed.

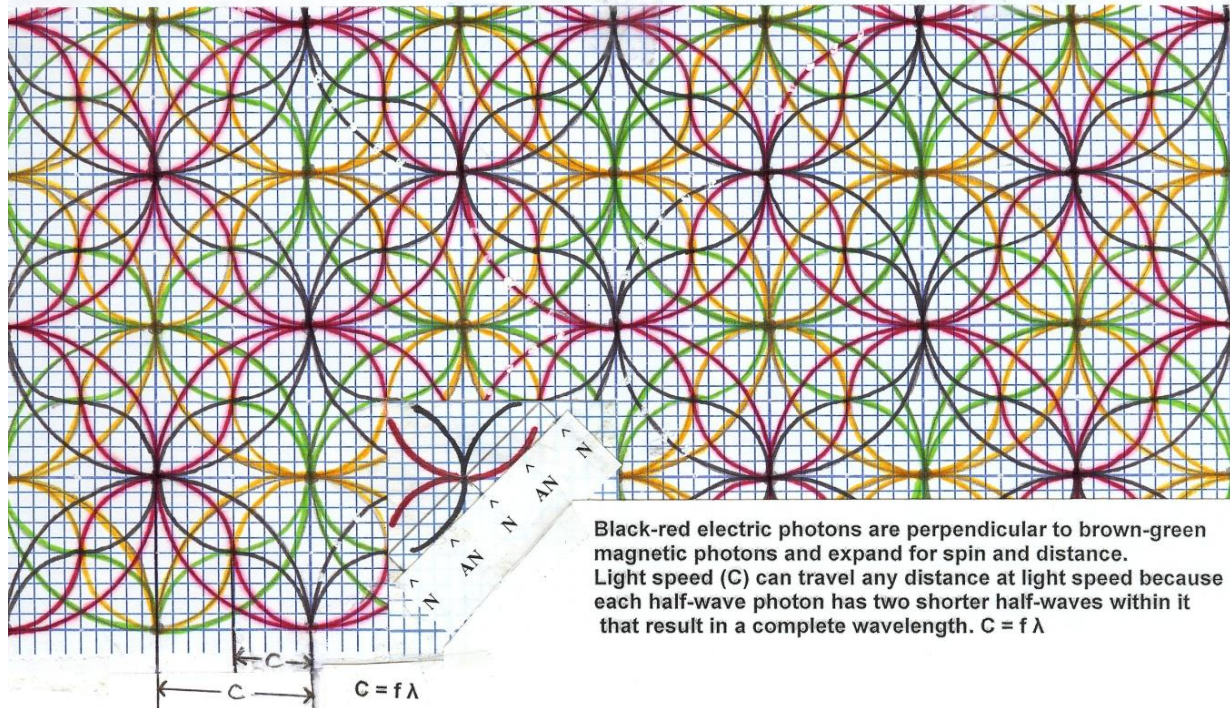
## 1. Introduction

Expansion of the electromagnetic field occurs at light speed in half wavelengths and contraction occurs at light speed in half wavelengths so the full expansion-contraction oscillation occurs at twice light speed in half wavelengths  $90^\circ$  out of phase. The driving force in the electro field is expansion while the driving force in the magnetic field is contraction. The physical universe is not only comprised of half wave photon energy because on expansion-contraction each half wave photon have two shorter half wave photons within it from the higher frequency resulting in complete wavelengths which is twice  $90^\circ$  or  $180^\circ$  out of phase in complete wavelengths. Therefore, we experience the physical universe when matter in the electro field is  $90^\circ$  in phase but not when gravitation is in full force  $90^\circ$  in phase as an offset in the magnetic field. In other words, light energy and gravitational pull in the magnetic field are always  $90^\circ$  out of phase when matter in the electro field is in phase.

In Figure 1A, half waves are open-ended where anti-nodes are in the middle and nodes at ends such that each half wave is multiplying into full wavelengths. Half wave photons are infinite as standing waves without distance and mass (no point A to point B); thus, without physical time since there is no gravitation for momentum. Black-red electro photons are transverse waves perpendicular to brown-green magnetic photons. Photon half waves are twice Planck's constant on expansion-contraction having very high energy levels creating mass in a quantum cone. In Figure 1A,, it should be noted that full wave magnetic photons are in phase with full wave electro photons at the nodes (center of half waves) but completely out of phase at the anti-nodes perpendicular,

Figure: 1A

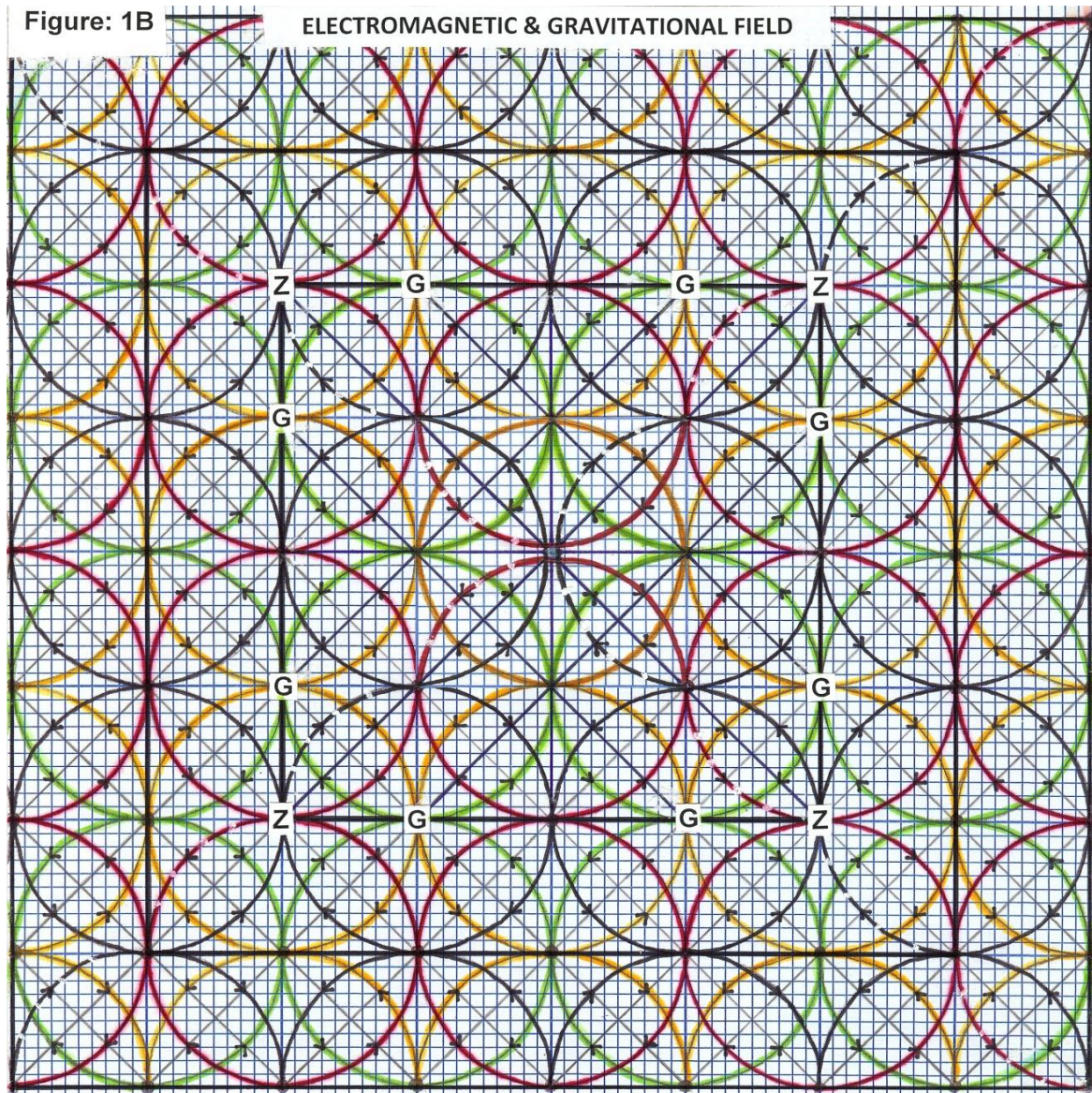
## OPEN-ENDED STANDING WAVES



## 2. Report

The electromagnetic wave is comprised of photon energy. Figure 1B below depicts half waves on expansion-contraction where matter 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 square distance from center. The square of the distance is from mass center with the four corners Z between the fields. Mass at center in the electro field Z coupled with momentum G in the magnetic field is matter with gravitational pull after breakout in an expanding field cone. Black-red electro photons and brown-green magnetic photons are perpendicular to each other with black-red expanding in direction Z and brown-green magnetic photons contracting in direction G. When black-red electro photons are expanding in direction Z, then the brown-green magnetic photons are rotating as momentum in direction G with the electro photons in Z. The magnetic field photons rotate inside the electro field photons when there is a change in the fields. Brown-green magnetic half wave photons are 90° out of phase with the black-red electro half wave photons perpendicular on expansion. Expansion comes from the prior higher harmonic with two shorter half waves within each half wave photon shell as a wave function.





In Figure 1B above, the magnetic field photons in G rotation coupled with the electro photons in Z direction needs clarity. Start with the 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 the black-red photons perpendicular in direction Z. Similar to Faraday's Law of induction, the magnetic field photons moving in a circle in direction G will cause a current inside the electro field photons that move in direction Z when there is a change in the fields. For an increase/decrease in amplitude of electro photons moving in direction Z, the magnetic photons will be out of phase having very weak gravitational forces on the black electro positive and red electro negative. Magnetic waves in direction G rotating inside the perpendicular electro waves are the inverse square distance from mass center in the electro field.

From direction of arrows in Figure 1B, the black electro and brown magnetic propagate as circular and sine waves while the red electro and green magnet move only as sine waves. Quarks deep in the apex of circular cones include the black electro circular waves, the black electro sine waves and green magnetic sine waves as the proton while brown magnetic circular waves, brown magnetic sine waves and red electro 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 electro half waves between protons and neutrons. Note: - all half wave photons in finite energy have two shorter half waves within from the prior higher frequency. Electrons expand outwardly in the quantum cone 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].

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 moving pictures in mass-time. Mass as finite energy is receding due to expansion in the field evidenced by the redshift and distance. Mass-energy equivalence is an equal function where mass is not the same as energy but equal to it when finite. Matter can neither be created nor destroyed because mass-energy equivalence is finite at light speed. 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 expansion-contraction that permeates everything as medium. It follows from the wave nature of energy at twice light speed that nothing finite exists but for mass-time created from it. Mass expansion in the electro field already includes part of the magnetic field as subatomic gravitational pull forces; the remaining magnetic field spectrum is light energy and gravitational pull on contraction toward higher frequency, the remaining electro field spectrum not subject to light and gravitation is dark energy and dark matter. [A star is formed when a large amount of gas (mostly hydrogen) starts to collapse in on itself due to its gravitational attraction.][2].

Electromagnetic field waves on expansion-contraction at twice light speed.

$$\text{Half Wave Full Harmonic Infinite Energy} = ZG^2$$

$$\text{Full Wave Half Harmonic Finite Energy} = MC^2$$

Electromagnetic field waves on expansion-contraction as matter and gravitation.

### 3. Conclusion

Extended Equation:  $E = ZG^2$  where  $ZG^2$  is half wave photon energy on expansion-contraction and is the cosmological constant for everything finite and infinite. This is twice Planck's constant:  $E = 2(hf)$  at twice light speed on expansion-contraction. Photon energy by itself can expand to any distance at light speed in Special Relativity and is timeless without matter. Time is not another dimension but rather mass energy in the electro field driven by momentum of gravitation in the magnetic field. Everything in the expansion mode is finite energy having mass in the electro field coupled with momentum of gravitational pull in the magnetic field.

Gravitational forces are very weak because photon anti-node forces in the magnetic field are out of phase with matter anti-nodes in the electro field. When mass energy is dormant (0 at the nodes in the electro field at light speed), then gravitational pull is very active in the magnetic field with the full force equal to mass energy but when mass energy is active (1 at the anti-nodes in the electro field), then gravitational force in the magnetic field is very weak out of phase at the nodes with mass in phase in the electro field. This brings to mind Heisenberg's uncertainty principle where the standing position of an electron in the electro field cannot be measured simultaneously with momentum in the magnetic field. The reason is because the two fields are out of phase and are reciprocal at light speed. Mass as a reciprocal of gravitational pull is outlined as follows:

$E = M C^2$  (From photon expansion-contraction in the electromagnetic field).

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

$C = 1/m$  ( $C^2$  or 1 applies to expansion-contraction at square of the distance between fields).

$G = 1/m$  (Mass and Gravitational pull are reciprocal from out of phase full wave base photons).

Space is comprised of standing half wave photon energy in the form of an electromagnetic grid where direction Z is the electro field perpendicular to direction G magnetic field. The energy is infinite at twice light speed in half wave photons at the square of distance between fields. Standing wave infinite energy have infinite standing time as opposed to finite energy with matter having moving (physical) time from gravitational pull toward infinite time. When matter is created in the electromagnetic fields from energy at twice light speed on expansion-contraction, distance comes into the picture at the inverse of its square between centers of mass and gravitational pull in the magnetic field.  $C^2$  is numerically one (1) as a multiplier and offset to mass due to reciprocity between fields. Thus:  $E = M(1)$  is mass in phase at light speed.

Given that photons have duality as a particle and wave function, the half wave photon shells act as energy particles in the electromagnetic field where the magnetic half wave photons rotate inside the electro half wave photons perpendicular, These half wave particle shells are 90° out of phase perpendicular between the electro and magnetic fields and are responsible for the physical (visible) universe. Inside all the half wave particle shells are two shorter half **wave** photons within from higher frequency half wave infinite standing energy. This gives the half wave particle shells the wave function in complete wavelengths. It's the full wavelength function that

is responsible for the reciprocity of the two fields  $180^\circ$  out of phase where the electro field energy and magnetic field energy offset each other for equilibrium. This includes mass energy in the electro field and gravitational forces in the magnetic field. What we see is what we get in half wave particle shells, what we don't see is the universe without mass totally out of phase in full wavelengths when gravitational pull is strongest in the magnetic field. Mass in the electro field and acceleration in the magnetic field are reciprocal and inversely proportional to the changes between them with the same net force. From expansion-contraction of the electromagnetic field, general relativity is curvature of the field photons by mass in the electro field and gravitational pull in the magnetic field toward higher frequency energy on contraction. [Space-time in general relativity is not flat but curved by the distribution of mass and energy in it.][3].

In summary: After half wave photons at twice light speed expand in full wavelengths at light speed, photons in the electro field will decrease in velocity on expansion, become weaker and more dense helping to take on properties of matter as protons, neutrons and electrons while photons in the magnetic field as light energy and gravitation on contraction will not decrease in velocity but act as an offset to mass energy for equilibrium and energy conservation in the fields. Photons provide all the different elements in the periodic table due to momentum frequency and wavelength in the electro field on expansion and magnetic field on contraction. When mass is created in the electro field, then momentum is born along with distance and physical time. The moving pictures at light speed are intermittent changes in physical time for finite energy coming from infinite energy as standing time. The fundamental frequency of standing waves in infinite energy is connected to everything finite as matter and time where the frequency pictures at light speed are past, present and future.

## 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 the diamond squares (rhombus) foreground in Figure 1B above.

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