

THE PHOTON FACT OR FICTION?

Bert Schreiber
4519 Holly St.
Bellaire, TX 7741-5802
charlesbert_99@yahoo.com

Abstract: The purpose of this paper is to discuss, what has been accepted without any arguments by the current establishment, what is called a “photon”. This photon is associated with electromagnetic radiation. It is accountable for all of the actions or behavior of radiation. This photon has, furthermore, been given certain parameters, properties, including intelligence etc., so that its actions defy reality. This paper will show that under the current beliefs, this massless photon cannot possibly exist but a or the photon in reality and as a mathematical concept for convenience does.

References are normally given at the end of a paper. To save effort, some of the references used, shortened, will be given in the text. Any can now be found with that information on the computerized “card catalogs” now at most libraries. { } means the author added, not in original references, or for the purposes so intended. /, backslash, means to take your pick. Electromagnetic radiation/field is simply Radiation. “light” still used in original works, etc.. Light is generic (used mostly inaccurately), and not necessarily that part of human vision, hence usage of Radiation.

1. Historical background:

O. Roemer (1644-1710) in 1676 measured the speed of light. He showed that it had a finite speed of about 3×10^{10} cm/sec. I. Newton (1642-1727) proposed light was corpuscular or particles. C. Huygens (1629-1695) proposed that light was waves. T. Young (1773-1829) in 1801 performed his infamous double slit experiment, showing that light was “transverse” waves. C. Coulomb in 1784 measured the forces on electrostatic charges and magnetic poles, to establish the force law, in cgs units. H. Oersted (1770-1851) in 1819 announces that an electric current in a wire produces a magnetic force. A. Ampere (1775-1836) in 1820 defines the force relationship between a current and a unit magnetic pole.

In 1856 W. Weber and R. Kohlrausch measured the ratio of the electromagnetic unit to the electrostatic unit. That is: $R = \text{e.m.u.}/\text{e.s.u.}$ This ratio, just a number, turned out to be about 3×10^{10} . H. C. Maxwell (1831-1879) attempted to prove that this number was the speed of light. He failed; his works were essentially worthless. [1][2] O. Heaviside (1850-1925) took over Maxwell’s work. He, apparently, proved that it was the speed of light. Heaviside, in conjunction with H. Hertz (1857-1894) made further modifications. Between the two, they came up with what is now, the accepted proof. Neither of them were right. They proved nothing more, than that ratio was still just a number. [1] Hertz then discovered, what is now called radio waves, were the same as light. That meant “light” covered the whole range of radiation. X-rays and Gamma Rays discovered later completed the range of radiation.

What is most important, is that:

1. No one knows *why* radiation is produced, in the first place.
2. There is no proof that it is some combined electric and magnetic field.
 - A. The current based mostly on Heavisides’s theory is a *model* and will give some correct answers or results. But by the same token, it will (like most model theories) also give some wrong, incorrect, or impossible results. See Note.

3. That the current assumption\definition of what a “wave” is, leaves much to be desired, i.e., all periodic motion is not a wave.
 - A. Fundamentally a wave follows two entities. First it must obey the equation $v = v \times \lambda$ (1) and secondly it must move without a permanent displacement of the medium it is traversing or moving through. A de Broglie wave is not a wave and is sadly misnamed. [1] See Note.

The end result is that no one knows anything about radiation per se. Whatever is written about it is its behavior or ex post facto and the remainder is pure speculation.

2. Background to the creation of the photon:

The word photon appears in many publications and is spoken of glibly by many lecturers, especially those presenting scientific papers at various symposia, etc. They all speak “nonsense babbling”, because there is *not one accepted definition of what a photon is*. There are some, currently unbelievable, properties given to it, in a plethora of scientific works. There are other, so-called experiments, which stagger the imagination, that apparently prove these impossible beliefs.

To understand how this photon came about, will require another short history lesson.

Max Planck (1858-1947) discovered that black body (continuous radiation) was of a quantum nature. It has some unit of action\energy, that only occurred in that number, i.e., only in singular and multiple whole numbers values to it. The singular value was named the Planck Constant and its symbol is h .

Planck, furthermore, found that the energy in light could be determined from this h . He formulated the equation that is: $E = hv$. (2) This equation gave the energy based solely as a function of its frequency. What most do not understand, is this frequency is the real or, a partial actual count *extended* to one whole second of “production (oscillation)”. Therefore (2) is actually a mathematical and physical shorthand or **shortcut** means for determining the *total energy in a specific frequency*.

The discovery of the Photoelectric Effect created problems. Radiation caused the ejection of electrons from certain metals. There was discovered that the speed of the ejected electron depended on the frequency. The number(s) of electrons ejected, depended on the intensity. What was not understandable, was the kinetic energy of the ejected electron was less than that as for the energy as given by Planck’s equation. The maximum energy measured was dependent on the frequency; then at what frequency did this effect start, and the metal source. Keep all of this in mind, as it is going to crop up again later, when A. Einstein’s photoelectric works are discussed.

This eventually resulted in the creation of the *original photon* as a bit of energy that could account for all (*one is missing!*) of the observed pressure of radiation and measured photoelectric effects. Simply, further reduce (2) to where only the E was used and nothing else therefrom. Simply, consider the radiation as a “point” source.

3. Current non-definitions of a photon:

To prove that there is no finite definition, nor finite parameters to this photon, the author will give some current selected versions as following:

1. *Random House Webster's College Dictionary*.

Def.: a quantum of electromagnetic radiation, usu. considered as an elementary particle that is its own antiparticle and that has zero rest mass and charge and a spin of one. S. Weinberg, *SUBATOMIC PARTICLES* adds: and always travels at the speed of light, so they cannot be contained within atoms.

- A. How can a particle have no mass? Likewise, what is its mass when moving? If still a rest mass, it could easily leave a “Black Hole” that destroys the “Black Hole” concept.

- B. If moving at c , it self-destructs as its mass becomes “infinite” per Relativistic Theory.
- C. A particle cannot be both matter and antimatter simultaneously. In accordance with present theory, it would automatically self-destruct (annihilate).
- D. According to G. Riemann (1826-1866), {not H. Minkowski (1864-1909)} his famous postulate on mirror images, a particle that is its own antiparticle will:
 - (1). If stood in front of a mirror could not see its “front side” or would be Dracula.
 - (2). Could see its rear side or look at its “back side” by some miracle of optics.

Come to think about it, no human has seen his/her own backside while standing in front of a single mirror.

- E. What is “spin”? It is an undefined concept (virtual?). Spin is associated with the electron itself, its angular momentum, its electric and magnetic “spin(s)”, so that will be bypassed. Could just as easily spiral in space or, “spin” in any of the three axes and in two directions, so is too vague to discuss.
- F. No charge? If it has no charge it will be neutral to start with, so that is an absurd statement and not required, i.e., replace “no charge” with neutral would be sufficient, i.e., neutral particle. However, it also might imply it may\does have some charge when moving so is not very clear at all.
- G. Always travels *at* the speed of light? This is misdirection. Radiation cannot go beyond the speed of light. Radiation can go *under* the speed of “light” as it does so all the time, especially when going through a mass like glass.

These previous points made ruins this definition, as it is so much unexplained nonsense.

- 2. *Dictionary of Business and Science*, Tver: The energy, packet or quantum (wrong word, quanta) associated with a train of light waves.
 - A. A combination of Einstein and multiple wavetrains. It can be assumed that those wavetrains then must be singular wavetrains individually.
 - {What a wavetrain is, will be covered in section 5.}
- 3. *ATOMIC PHYSICS*, Finkelburg & *A New Dictionary of Physics*, Gray & Isaacs: (Isaacs & Gray adds “- as an elementary particle traveling at the velocity of light.”) {velocity incorrect, should be speed}

Def.: Therefore a photon of energy $h\nu$ has an inertia corresponding to

a mass $m = h\nu / c^2$ {he (2-53)} (3) and a momentum

(mass x velocity c) $p = h\nu / c$ {he (2-54)} (4)

- A. That sort of ruins previous 1., as it must have a mass in order to have inertia and momentum.
- B. This causes complications, as in accordance with Relativity Theory, as any mass speeding at c has an infinite *apparent* mass. However, apparent doesn't mean real and Einstein never said, wrote or implied, that mass increases with velocity (speed). Author has a \$2000.00 reward for anyone who can prove Einstein spoke, wrote or implied [he implied exactly the opposite] that it was real. [4] Einstein said: The *apparent measured* mass increases with *velocity*. That is a double gross distortion (speed replaced velocity, and then used, as real) by those fanatic scientists. This is taught to unsuspecting students, for those scientists' own monetary gains and is not part of this paper.
- 4. *McGraw-Hill Encyclopedia of Physics* and various others of a similar vein combined, that results in: A photon is a quantum of a single mode (i.e., a single wavelength, direction and polarization) (having *all the permitted energy* as it was probably understood by Einstein.) of an emf (light) Also as a “fuzzy ball”.

5. *University Physics*, Benson pg. 825: "The name Photon was coined by G. N. Lewis in 1926. Einstein pictured a wave front as consisting of billions of photons $\{E = hv \text{ ones}\}$. He assumed the energy was not spread uniformly over a wave front, but concentrated in bundles, localized in space. (FALSE! Einstein specifically wrote "ray-energy quanta-does not diverge" {no spherical wave front}) [3] The modern view of the photon is not quite so straight forward."

Now in this reference guess what? There is no further discussion as to exactly what this "modern view" is. This gives a pause for wonder. Students had better not question this either.

6. *Fundamentals of Physics*, Halliday & Resnick 1970, pg. 765: Uses Einstein's $E = hv$ version. What is very strange, is that this same text now with another author added, Krane, 4th. Edition 1992 does not have the word photon anywhere in it. Gone!

Those are enough "non-definitions", so now it is time to go backward into history once more, before the photon received the revisionist treatment.

4. A return back into history:

A. Michelson (1852-1931) in 1881 designed another kind of interferometer. His interferometer had many applications. One was to measure the *wavetrain length* produced by the line spectra of the elements. His interferometer quits working (no fringes can be seen) when the wavetrain length exceeds the arm path length. Measurements done prior to 1900, on the sodium 5890 Å line, showed a wavetrain length of about 480 cm and from the activation time to cause sodium vapor to emit radiation and by many others following. This meant that the electron *oscillating and producing said line*, must have oscillated [3.6. has this] about 1.6×10^{-8} seconds.

This alone destroys the current photon concept.

These proven experimental result were either forgotten or ignored, unfortunately.

Einstein received his only Nobel Prize in 1921 for his work on the Photoelectric Effect. This work was done from 1905 onwards, after he received his doctorate. The word "photon" was coined by G. N. Lewis in 1926. [3.5 has this] Current textbooks, on Einstein saying "photons", et al, lie. There is no way Einstein could have ever used the word photon in his works until long after 1926.

5. What is radiation?

1. Radiation has mass. [5] Radiation can be bent (attracted by gravity) and as the effect of gravity can only exist between masses, then radiation *must have* an intrinsic mass.

The referenced experiment proved, beyond any doubt, that light had mass. It was not due to any Photoelectric Effect ejected electrons or to any radiometer effect. It exerted pressure when stopped. Momentum of Radiation transferred to momentum of apparatus components.

- A. This meant that Finkelburg's equations, and others giving light mass, were correct.
- B. That the current establishment scientists ignore reality. The photon cannot be massless.
2. That what Einstein called a "bundle" (he was confused over intensity) was really a single wavetrain, not a multiple or that bundle of them.
 - A. That makes radiation, under normal conditions, a series of connected spheres of finite length. Those sphere's diameter is then its wavelength. *Longitudinal* if viewed from the side and *transverse* when viewed head-on or from the rear.
 - (1). That each cycle of this wavetrain is a sphere was proven by Larry Spring using TV signals whose spheres are around 10 feet in diameter. [6]

- B. The real *wavetrain* that was extended to a *standard length*, used by Einstein, that made the “photon”; either a shortcut = $h\nu$ or its equivalent kinetic energy equations, i.e., convert the energy to its mass equivalent, the Finkelburg equations, and one will achieve the identical results, in a purely mechanical application.

6. The Photoelectric Effect explained:

The first problem was the problems with “intensity”. Utilizing this singular wavetrain concept, that problem is resolved. Intensity is simply the number of individual wavetrains per unit area. One electron oscillating (jump from higher energy level to a lower energy level) produces one wavetrain. One wavetrain produces one ejected electron.

The next was called “threshold frequency”. For one particular metal, there is required some minimum frequency to cause the first electron to be ejected. After that, the end result is, the ejected electrons come off with more kinetic energy the higher the frequency thereafter.

The ejected electrons never came off with 100% of the energy of the radiation frequency being used. What Einstein did, was show that there was a “work function” for each metal.

Simply, some energy was retained (actually used to free up the ejected electron) and once this was done, the remainder of the energy in this wavetrain of that particular frequency, went into giving the ejected electron its speed, hence its kinetic energy.

The last problem, though it should have been obvious, was that it took some finite time for the electron to be ejected after the wavetrain hit the surface. Not all electrons came from the top surface of the metal. Some were ejected from layers below the surface. That is, there were some ejected rapidly and some ejected slower than normal. Obviously, there were some electrons having the *maximum permissible energy* and others coming out with lesser energy.

What Einstein did, was to calculate the *oscillation time* required to create\generate\produce a spectrum line, wavetrain. [5] The approximate ejection time measured was (at that time due to the state-of-the-art) about 10^{-8} seconds. Simply, no ejected electron came out *in less time than the time for the entire wavetrain to be absorbed*. Had current apparatus been available, that ejection time would be *exactly* that from the interferometer (and Einstein’s calculated values) measurements.

But most important, there is/are **no current accepted theories that can account for the electron ejection delay or lag time**.

7. Conclusions up to this point:

The entire gamut behavior of radiation can be fully accounted for by the usage of the unidirectional wavetrain, a RAY, that series of connected spheres. This then fully explains the electron ejection delay or lag time and can be calculated for a specific line spectra frequency. Simply the first number of cycles in the wavetrain is used to free up the electron and the remainder of the cycles give it its kinetic energy or speed.

OVERKILL: Two line spectra of the near identical frequency from different sources have the same total energy but can and do have vastly different wavetrain lengths. Ergo, if the first is short to the longer second, the first one will eject the electron much sooner than the second one will. Reasons obvious. *This is not a function of frequency*.

That radiation has mass and proved beyond any doubt. That ends the current nonsensical and undefined photon. The photon concept is nothing more than a mathematical shortcut that became an entity.

Brevity prohibits any further destruction of current beliefs concerning radiation.

8. Author's photon:

Based upon the author's works, [1], a mere fragment of which is shown here, permits a photon to be defined. A photon is:

1. One single cycle of radiation, having all of the energy it is permitted, based on Planck's Equation. E in one cycle = $h\nu$. (2) For practical calculation purposes, it may also be treated as a mathematical shortcut.
- A. Therefore, it has limits, maximum and minimum.
 - (1). The longest wavelength with one h would be of one-cycle/sec whose wavelength is the maximum length radiation goes in one second. That is, a single sphere 3×10^{10} cm in diameter moving *at c* (maximum).
{The author claims that these are known as the free neutrino(s) or those neutrinos that now are created in nuclear reactions or come from outer space.}
 - (2). The shortest, though it cannot exist, would be the Compton Wavelength of The Proton or, its de Broglie wavelength when its speed = c or, the calculated wavelength **if** it could be, **in toto**, transformed into radiation (energy) in accordance with Einstein - Planck's Equations. That imaginary single cycle would have about 2.26×10^{23} h 's in it.
- B. That it is possible to create quasi-photons by using radio/radar frequencies. These will be humongous photons that can/will be created by producing one single cycle of radiation containing multiple h 's, over and above that as limited to Planck's Equation.

Simply, Planck's Equation requires one whole second, but any one cycle can have more than one h per cycle as Planck requires. That is how radio/TV frequencies manage to be so powerful. A line spectra wavetrain when it is "stretched out" to one whole second of "frequency" would have each single cycle in it, containing one h of associated energy. That is all that Planck's Equations says.

At the risk of overkill, there are two parameters involved.

The first is: What minimum energy could be in one whole wavetrain? Light produced from spectra lines have a short wavetrain length, so that each single cycle in them contains more than one h of energy. Two close frequencies, from different sources, can and do have widely varying wavetrain lengths per Einstein's equation.

The second is: For continuous production, radio waves, etc., what is the *minimum* "power" permitted? That is the weakest radio signal, in *one cycle*, would have only one h in it.

The *maximum* power is limited to the *source* of radiation production. For radio frequencies, more h 's can be packed into each of those single cycles. The author calls this "merging" which leads into more of his discoveries. But most important, (2) only applies when there is just one h per cycle in for the frequency when it is extended to one whole second. In reality for radio frequencies the actual equation is: $E \text{ total} = \nu \times h's/\text{cycle}$ for one or more cycles. (5)

Continuous radiation from hot masses can be considered as frequency modulated. That is, each cycle on either side of (ends obviously not applicable) is a lower or higher frequency than the one in the middle.

Furthermore, the difference in wavelength, from the middle cycle, is one Compton Wavelength of The Proton more, if higher, and less, if lower. The frequency goes up in steps of one cycle/sec likewise, i.e., no *minimum energy* 1 1/2 cyc/sec (or any fractional value as far as that goes) is permitted in Radiation. However, such a frequency can be generated, but does not conform to Planck's Equation. It will be those "merged" cycles, maximum, that have a *total* of 3 h's in it. The fractional frequencies production ceases, a limit, at the infrared (microwave) wavelengths. All production above that follows Planck's Equation. Lasers are not one wavetrain with those merged cycles, but simply multiples of individual coherent wavetrains that increase that laser's intensity, i.e., power.

Regardless of the source of Radiation, there are only two kinds. The first is the continuous radiation or the black body that is below ionization temperature. The second is that of single frequencies or line "spectra" so as to speak. Minutiae skipped.

Simply, ***everything*** (*mass, length, time*) goes up or down in whole number quantum jumps. They must do so, or **lasers would simply not work** if h cannot occur in whole number values. Experiments have, so far, proven h only occurs in whole numbers.

9. End of current absurd massless photon:

To attempt to find some precise definition of what is now called the massless photon resulted in a failure. There were many variations that it exists, but no one general agreement. To the best of what can be determined, the current massless photon was derived by slowing down a wavetrain to where it is a rest mass of (a false concept to start with) or an imaginary as if point. This is best shown by a simple illustration. Let a small mass, say 0.01 grams, have a speed of 1000 cm/sec. Now pretend that is the wavetrain or its E. Now slow it down that means its mass must INCREASE at a lower speed to maintain the original E or its kinetic energy. As it goes still slower APPROACHING absolute rest or the closest it can get to same, then its mass must increase to some maximum value. Its mass does not go to zero when at rest. Exactly the opposite, to infinity.

The scientists forgot this simple first year physics and said the radiation's mass DECREASED and became zero and hence was massless.

But the previous paragraph is false logic. Radiation can be slowed down by two means. The first is the unproved Tired Light Theory. If such exists, then the each of the Radiation's cycles simply becomes and reaches a one cyc/sec frequency and can go no lower. Hence, its equivalent mass is the quantum of mass; small, but not zero.

The second is by moving through a medium. Under normal conditions, the wavelength changes but the **frequency does not change**. Hence the total energy and hence its mass equivalent remains constant.

The end result is that massless photon is based more on philosophical arguments or what ifs or what ever or suppositions having no basis in reality. As one example, the mass at the center of a photon (i.e., the center of the wave) at rest is zero (what ever that means).

10. SUMMATION

It is the author's hope that this very brief paper has been capable of clarifying what a photon actually is. Further proofs can be found in the author's book. See Note:

References:

- [1] B. Schreiber, QUANTUM - QUANTA THEORY *** THE THEORY OF THE UNIVERSE, self published, sixth revision, 2005
- [2] E.T. Whittaker, "Oliver Heaviside", Introduction to Heaviside, O, ELECTROMAGNETIC THEORY, vol. 1, 3rd edition, Chelsea Publishing Co., 1971, republic of London, 1893, pg. XVII
- [3] A. Einstein, On a Heuristic Point of View Concerning the Production and Transformation of Light, Annalen Der Physik, 1905
- [4] New Energy News, in March, Apr. & May issues), 1998 {{On web}}
- [5] R. W. Ditchburn, LIGHT, Dover Publications (unabridged reprint) 1961, pg. 656 Einstein's equation, pp. 555-559, light pressure (mass action of)
- [6] L. Spring, MAGNETOSPHERES & THE SPRING ATOM, self published, 1995

Note: The author's book and other associated papers etc. can be found on the web at (no www.) <http://web2.airmail.net/nptbs> though it is easier to use search with: collected schreiber. Under the section SIDE PAPERS are DEFINING WAVES, DEFINING A VACUUM, MODELS AND THEORY, and under the section ARTICLES, ON THEORY.

Reference [4] has been greatly updated and is on the site as EASY MONEY II and FALSITIES IN CURRENT THEORIES.

Updated January 2006