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ABSTRACT

We describe electromagnetic energy as a follow up to the author's THE ANTI-NEUTRON MODEL OF THE ATOM. See www.k1man.com/c2 We identify the exact source and reason for "quantum" in quantum mechanics. A radio wave is continuous emissions, while light, X, and gamma are discrete because of the sudden deceleration of the electrons (inside the atom) when quickly stopping and thus generating electromagnetic emissions as electrons change energy states within the atom or inside the nucleus. That would explain a lot! Those "bursts" of electromagnetic energy are the "photon" (Planck/Einstein) bundles of energy, quite different from a mostly continuous (but kind of sudden accelerations/decelerations at the positive and negative peaks) of radio waves. But how do the "photons" interfere with one another? And how do the "photons" diffract? Quite important is the general view of $E = MC^2$, which the author has disproved as a general law for ALL matter in www.k1man.com/c1 $E = MC^2$ is/might be approximate for annihilation, as described in www.k1man.com/c2

This new approach will better address the "particle" wave duality quantum mechanics mystery.

ARGUMENT

If you suddenly "turn on" an electric, magnetic, or electromagnetic "field", its influence will move away from the source at the speed of light. Nothing fancy. The influence travels at light speed relative to the source with no medium necessary (as with an electric or magnetic "field;" and if the receiving end is moving at a relative velocity, such as moving toward the source at velocity v , then the relative speed of electromagnetic "field" relative to the receiving end is $c + v$. See www.k1man.com/c9

An electromagnetic field is "generated" by acceleration or deceleration of an electric charge. A sinusoid ally amplitude changing electric charge connected at the center of a dipole antenna will "send out" or "radiate" quite noticeable packets of electromagnetic energy each time the electric voltage peaks and changes from increasing to decreasing of the reverse. If you were "riding" on the sine, you would be affected (inertial - an analogy) most at these changes; that is at the positive and negative peaks. So there would be a particularly strong "packet" at each peak, but there would also be a (probably?) continuous electromagnetic field sent out at the speed of light during the entire sine function. When this expanding electromagnetic field encounters a similar dipole antenna wire some distance away, the undulating electromagnetic field causes electricity to flow on that wire identical to the electricity flow on the "transmitting" antenna, although much weaker, of course, since the "field" is spreading out while its influence "moves". If the antennas are just the right length so that the electricity direction reverses just as its influence on the wire reaches the end of the wire, we say the antennas are in resonance, analogous to pushing a child on a swing at just the right times so that the swing goes higher and higher.

But the electromagnetic energy, somehow, might not be continuous. Dr. D. Sasso refers to this activity as nano radiation. See www.k1man.com/a6 We don't know. It might be in discrete "lumps" that "take off" after a necessary and "critically minimum" amount of acceleration or deceleration of the electron has taken place.

However, the sinusoidal nature of this hookup (and large collection of nano radiations) gives the electromagnetic entity a wave like appearance together with a wave length which is determined by the physical frequency of "radio" transmitter oscillation of the original sinusoidal "radio frequency" voltage applied to the transmitting dipole antenna.

Thus the confusion between waves and energy packets (bursts) or "particles."

The "lumps" of electromagnetic energy are stronger in proportion to the suddenness or rather the intensity of the acceleration or deceleration.

Radio waves are pretty low in energy, since the frequencies start at zero and extend from 0 to the 300 billion (or so) cycles per second, called Hertz by radiomen/radiowomen. The energy of this electromagnetic entity is thus proportional to the sinusoidal frequency, or we could say $E = Kf$ where f is frequency and K a constant, probably not Planck's constant. Planck's constant arises because of the so called "orbital" levels that the electrons start from at the atomic level, approximately analogous to a satellite giving off heat as it comes out of orbit. The atom probably has no such orbits, but chemists have been extremely successful in using this approximate model. We say approximate because the model is just that, an analogous model. We will never see it "up close" anyway. Just as Dr. Freud models the human brain (with proposed names such as "id" and "ego"), far too complicated for mathematical analysis by "pea brained" humans!

When an electron changes "orbits" in an atom, **the electron comes to an abrupt stop or deceleration, and** the resulting bursts of energy are of different magnitudes, and Planck proposed their discrete values to be $E = hf$, where frequency incorrectly implies a wave like characteristic similar to a radio wave. But the damn things act like "waves," so it seems.

Here we come to "weird" quantum mechanics where these visible light electromagnetic bursts exhibit the wavelike feature of interference similar to the behavior of lower "frequency" radio waves. The electromagnetic field does spread out as it travels, thus explaining the double split experiment, but just how these electromagnetic "bundles" interferes with themselves and exhibit phase like behavior is not clear.

Your author maintains that just because it walks like a duck and quacks like a duck does not mean that it is, in fact, a duck! Radio waves are not the same as heat, light, X, and gamma rays. Dr. Sasso comes to the same conclusion but does not offer an explanation why. See www.k1man.com/a6

Just because these "photon" bursts of energy can interfere with each other does not mean that they are waves. If boys laugh and giggle it does not mean they are identical to girls who also laugh and giggle. Positive and negative "interfere." North and South magnets "interfere." So do "photons."

Electrons and positrons can cancel their charges as well as their masses. How they cancel masses is certainly not clear. But the simplistic and incorrect Dr. Einstein idea that $E = MC^2$ for **all** mass would be too good to be true. The mass - energy conversion process is a special case for only certain kinds of masses such as electrons and positrons.

The Anti-Neutron Theory/Model of the atom (See www.k1man.com/c2) holds that all matter except anti-neutrons, which do not exist by themselves, contain charges, and thus all atom particles will therefore exhibit $E = hf$ wavelike

properties when accelerating and decelerating, per Dr. Louis DeBroglie. Dr. DeBroglie just went too far with his brilliant idea.

When electric charges move around and stop abruptly inside the nucleus, where distances are small and forces therefore very high, the "bursts" coming out are correspondingly very high electromagnetic energy called gamma rays.

If you shoot electrons toward a metal plate, their sudden deceleration produces X electromagnetic radiation called X rays, which also show wavelike properties such as X ray diffraction.

When electrons and positrons "crash" together (and decelerate quickly), the ending speeds just before "contact" are quite high; either less than, equal to, or greater than the speed of light. If a sudden stop is from the speed of light, then by conservation of the kinetic energy of $\frac{1}{2} MC^2$ for each "particle," the resulting gamma burst of electromagnetic energy would be $E = MC^2$. In fact, the energy levels are all over the lot. Organization of energy amounts only happens when definite energy "levels" in the atom occur such as in classical chemistry but not the case, probably, in the nucleus. See THE ANTI-NEUTRON MODEL OF THE ATOM at www.k1man.com/c2

If you scratch a nail along a screen, you can hear noise across the dial from a high frequency (short wave) receiver because nano radiation is generated containing many different energy levels and having nothing whatsoever with the different resonant frequencies that the short wave radio happens to be tuned to.

So, if you could measure photon (gamma ray) energy, somehow, you could calculate the electron – photon speed at time of contact. The energies associated with radio frequency electromagnetic energy is quite difficult to calculate because there are an infinite number of accelerations/decelerations during the sine. But, again, the electromagnetic energy might burst out at only critically energetic points.

This non quantitative paper offers a broad frame work for better understanding all electromagnetic energy as simple acceleration and deceleration of electric charges. Why and how acceleration does the trick is unclear as is the relation between acceleration and gravity which is "generated" by (all kinds?) of mass.

Your input and ideas are welcome. Institute@k1man.com 207 242 2143 Glenn A. Baxter, P.E See www.k1man.com/v and also www.k1man.com/k www.k1man.com/physics