

Light and photons

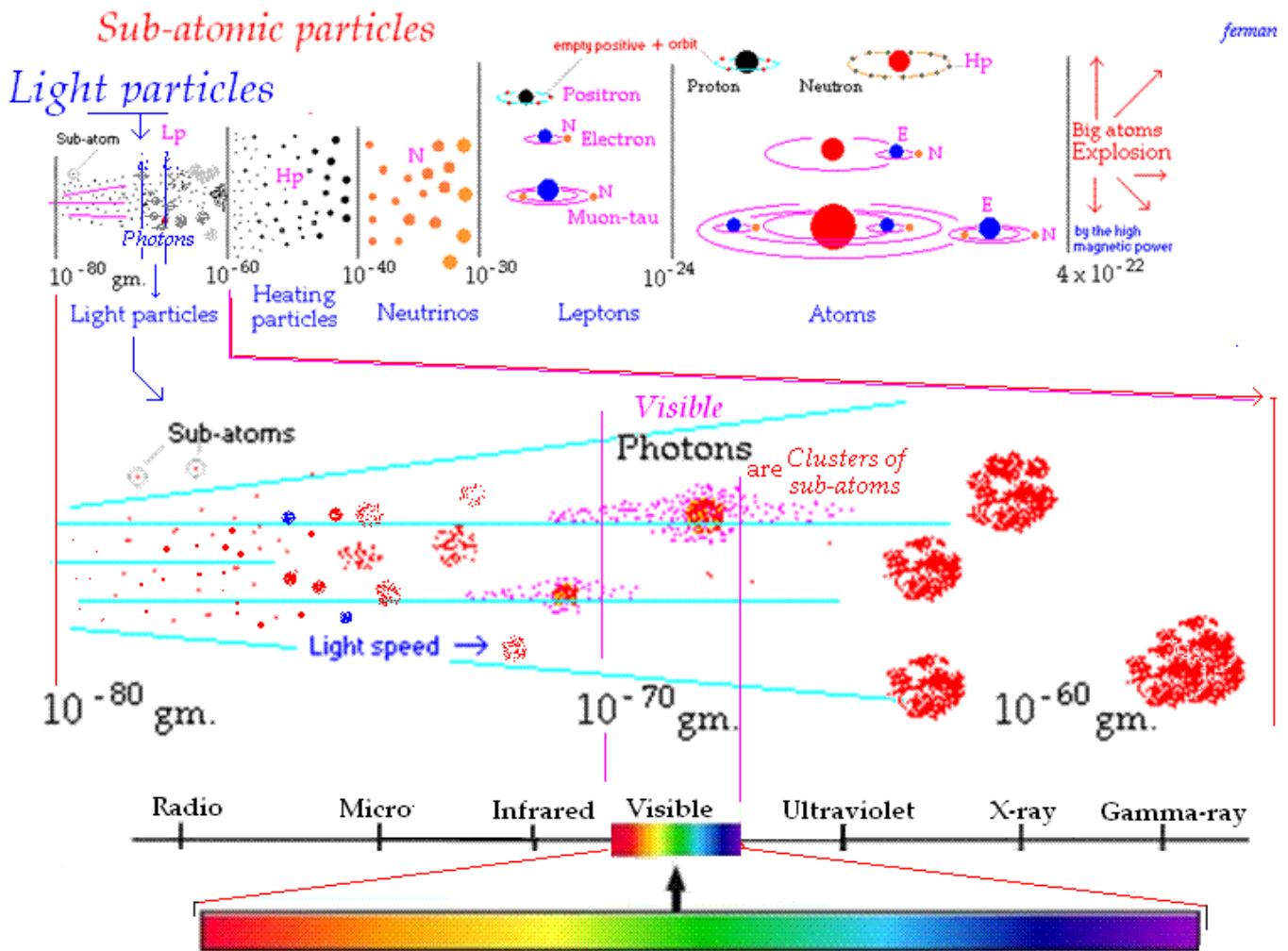
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Preamble

Light is composed of particles of matter moving at the speed $C = (300,000 \text{ kms./s.})$ But they are not waves, but simple particles of matter.

Currently it is believed that they are both particles and waves at the same time; however physical principles, tests and observations will tell us that they can't be waves, nor carry waves inscribed to these particles. But we will see these tests in the end, because by the moment what interests us is to explain the nature of light as particles, their dimensions and characteristics, and so, we are going to explain that question firstly. Once proposed that light is only particles, we going to study on what these particles consist of and how they are produced.

Let's first show in a drawing how the sub-atomic particles, to which the photons belong, are distributed and grouped.



Photons are packs of luminous particles (sub-atoms) from 10^{-60} to 10^{-70} gms. about

Minor components of the atoms

In the first place we would have the smaller particles in which the atoms can be divided, and which would be the sub-atoms.

(At the same time the sub-atoms are also divisible, but that belongs to a much lower level than we do not have to talk about in this study.)

Well, sub-atoms are particles with a mass of about 10^{-80} grams. And they are similar to atoms in their constitution.

But for the moment we will only consider them as sub-atomic particles that can be grouped together forming higher ones, until the bigger accumulation of sub-atoms get to be the essential components of the atom, such as nuclei, electrons, neutrinos, etc.

That is, all the atomic components are internally constituted by extremely small particles that are the sub-atoms.

Emission and capture of particles by atoms

Atoms are well structured systems and in perfect condition and balance of contained energy.

If an atom is restructured by any circumstance, this atom exerts powerful magnetic forces of all kinds to return again to a perfect structure and balance of energy in its entirety.

** Therefore, we must establish here that the magnetic forces in their various categories and levels are always trying to rebalance the structure of atoms (and other large particles) in terms of their content and energy distribution within the space that this particle dominates.**

Whether in nuclear explosions, chemical reaction with transfer or capture of electrons, change in the arrangement of electrons in their orbits, etc., atoms make that their magnetic forces work to rebalance again, yielding or changing electrons of site and emitting or acquiring energy in the form of all kinds of particles.

In the case of an atomic restructuring in which particles must be ceded, the magnetic forces of atoms produce a powerful force of emission of particles with different emission velocity in each of them depending on the size of these particles. When greater are the emitted particles - lower is the speed, and vice versa:

When smaller are the particles - greater is the speed that they reach; arriving in the so-called electromagnetic emissions at the speed of light since these tiny particles are of minimum dimension.

Well, within the group that we could call luminous or electromagnetic particles, we would have the emission of simple sub-atoms until to reach the large gamma particles that consist of large accumulations of sub-atoms.

Among these electromagnetic emissions, the emission of simple flocks of sub-atoms would form the radio emissions.

That is, each radio-impulse emits a huge barrage of loose sub-atoms.

Between impulse and impulse there would be an empty space without emission, and then another impulse would come with what would produce a radio wave.

Then come the groupings or formation of sub-atoms in the form of independent particles (similar to what the stars do to form galaxies) and these would already be the photons of light that our eyes can already see.

Thus, photons are compact groupings of sub-atoms, that acting in common as particle, they can already excite our organ of vision when having enough power and energy.

Later on, we have other larger and more compact sub-atom formations that would be x-rays, gamma rays, etc.

And finally, would come the greater formations of sub-atoms as can be heat particles, neutrinos, electrons, atomic nuclei, etc., till form atomic systems, or atoms.

The particles are not waves.

Well, here is a simple description of the types of sub-atomic particles that exist.

Now we will try to explain why the particles can't consist of waves.

Sub-atomic particles are not waves, but simple material particles, not virtual, not uncertain, well defined, well localized, etc.

Therefore now we are going to expose some fundamentals and observations about the impossibility of the particles being waves.

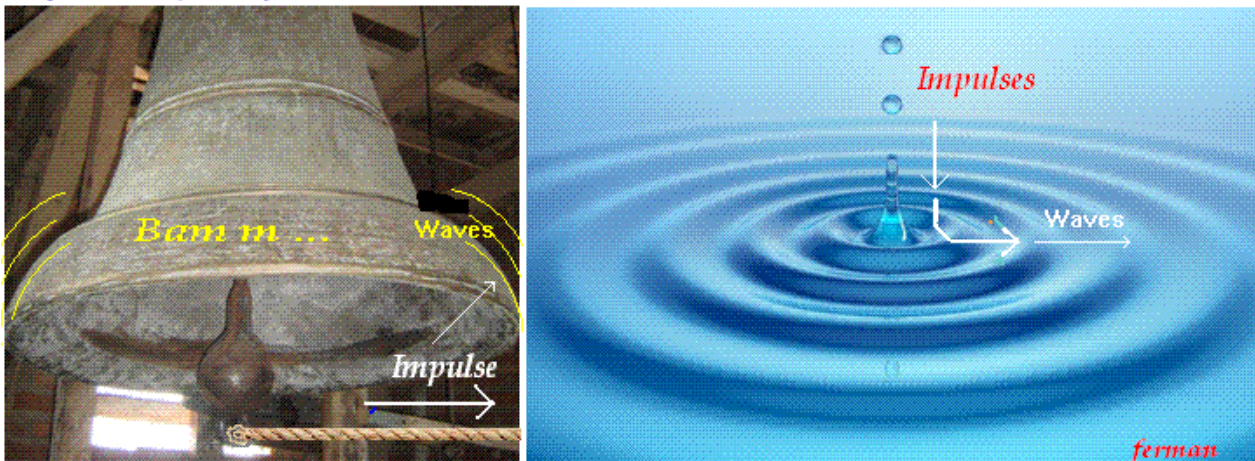
1.- Foundation of energy.

Inertial principles of oscillation and waves :

Oscillation and Waves consist on a continuous change of direction (i.e. back / ahead) and so a continuous inertial change and consequently a continuous waste of energy.

Question that make impossible that light, particles, etc. can be waves, because in this case they will be wasting energy continuously.

Say, stable pack of waves is a nonsense mental recreation



Inertial Principle: Any stable and contant wave needs of a constant wasting of energy also.

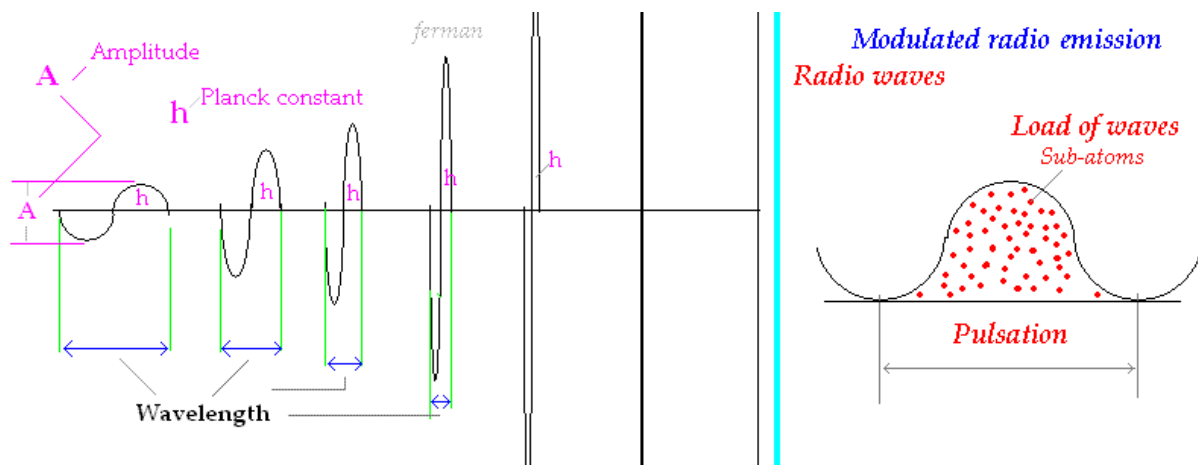
Every wave needs a continuous waste of energy to keep being wave, all because a wave consisting of a continuous change of sense of movement, and therefore an inertial change, and so, needing waste of inertial energy to change the direction and form of movement.

Sound waves, electrical, magnetic; maritime waves, vibrations of bells, decks, etc., need a continuous supply of energy, since as we have said; they have an anti-inertia movement due to a continuous change of direction of movement

Contrary to the particles or body to which a force is applied, they acquire that force in form of inertia and conserve it as long as they do not suffer other opposing forces. Inertial Principle.

For this reason and due to the law of conservation of energy, "energy is not created or destroyed" an infinite and continuous expenditure of energy is not possible in the waves particles.

2.- Principle of location of waves in space.



In the electromagnetic waves, (as they are explained currently) the difference between the radio waves and the gamma rays for example can be of the order 10^{20} in length and frequency, and of course, as consequence of that, also must be difference in amplitude.

This case, and against any logic, according to the applied Planck formula, each wave pulsation has only the value of his constant h .

Then the variable of amplitude of each wave will be very different so that each section or wave sinusoid has the same value h .

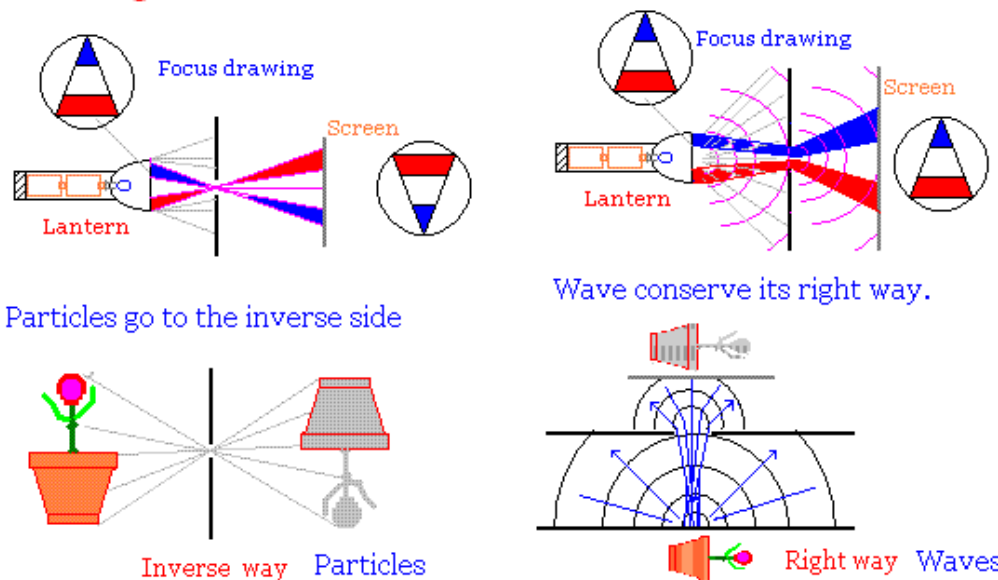
In this case for smaller radio waves, such as about 1,000,000 m., the amplitude of the wave would be almost null, that is, it could be the dimension of an atomic radius.

Contrary, the amplitude for gamma or cosmic rays, whose length can be about 10^{-13} meters, its amplitude would be about 10^{13} meters, which would mean that its amplitude would surpass our solar system.

As we see, these measurements are impossible to locate and be detected by any of our terrestrial meters or by our human capacity of perception.

3.- Inversion proof.

Left - Right proof *ferman* *Light are localizable particles*



Another proof against the waves of light is the proof of inversion.

The material particles move in a straight line, and do not expand.

Contrary, waves expand.

In this case, when a hole or slit is opened in a closed window, we see that when going in straight line, photons pass through the hole in straight line and end up forming an inverted image on the inner-frontal wall.

If light were waves, then the light rays would expand like any wave towards their same side, forming an image not inverted.

Then in the dark camera the light shows to move in a straight line and not in expanding way, that is, light are particles but not waves.

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