

## Free Photons Are Actual Substance of Aether

Changming Wang

Email: [changming@mountainviewgrowers.com](mailto:changming@mountainviewgrowers.com)

November 6, 2024; Last updated November 28, 2024

### Abstract

Photons are matter that have mass and energy<sup>2</sup>. Photons vibrate because of their energy. Photons tend to share energy with other matters to form the least energy bonds under the situation. When bonded photons get more energy than their bonding force, they become free photons. For free photons, vibrating is traveling, in the direction of leaving the energy source, at the speed of almost 300,000 km per second<sup>5</sup>. As the energy carriers of the Universe, free photons are the actual substance of Aether<sup>10,11</sup>. Free photons maintain the Universe, since they are responsible for the dynamic least energy formation of the Universe<sup>2</sup>.

**Key words:** Photon, Bonded photons, Free photons, Vibrating is traveling, Energy carrier of the Universe, Substance of Aether, Dynamic Least Energy Formation.

### A. Introduction

A lot of research has been done on photons; a recent one is on the shape of a photon<sup>1</sup>. But the nature of photons has not been thoroughly understood, and their functionality and importance has not been realized.

### B. The Nature of Photons

1. Photons are matter that have mass and energy<sup>2</sup>. Although a photon's mass is almost 0<sup>[3]</sup>, its energy is always more than 0 (absolute zero in temperature could not be reached<sup>4</sup>).
2. Photons move because of their energy, by vibrating.
3. Photons tend to share energy with other matter to form the least energy bonds under the situation<sup>2</sup> and become bonded photons.
4. When bonded photons get more energy than their bonding force, they vibrate faster and break the bond, leaving the energy source, carrying the energy away, still vibrating to release the extra energy, becoming free photons (lights). Until they release their extra energy and become bonded photons again.
5. That is, for free photons, vibrating is traveling, in the direction of leaving the energy source, at the speed of almost 300,000 km per second<sup>5</sup>.
6. The vibrations of free photons have different frequencies and wavelengths, depending on the energy. Free photons with wavelengths from 380 to 700 nanometers are visible lights<sup>6</sup>, the rest are invisible lights.

Let us look at some examples and evidence of how these natures (rules) work:

### **C. Example 1. Wave-Particle Duality**

Following de Broglie's proposal of wave-particle duality of electrons, in 1925 to 1926, Erwin Schrödinger developed the wave equation of motion for electrons. This was generalized to all small particles later (including photons). Still, a lot of questions, theories, and experiments followed<sup>7, 8</sup>.

But based on the nature of photons, it is simple:

Free photons are particles. For them, vibrating is their nature to shake off extra energy, and vibrating is traveling. So, wave-particle duality is just the way they are.

For any other free and small particles, since they all have energy, they will all vibrate.

### **D. Example 2. X-ray and Gamma ray**

Photons bonded with electrons become X-rays, while photons bonded with the atomic nuclei become gamma rays<sup>9</sup>, when they get enough energy to break free and carry the energy away.

Gamma rays have the shortest wavelength of photon vibrations, shorter than those of X-rays, because they carry the highest energy.

The transfer of energy by gamma ray is called “decay” of atomic nuclei, because the previously bonded photons are separating from protons and neutrons and taking the energy away.

### **E. Example 3. Aether (ether)**

In the late 19th century, physicists postulated that aether permeated space, providing a medium through which light could travel in a vacuum. Although they did not find any substance of aether, the ideals and theories persist<sup>10, 11</sup>.

Since free photons vibrate by their own energy, and the vibrations carry them 300,000 km per second, they do not need a medium.

Since free photons are also energy carriers of the Universe, they are the actual substance of Aether.

### **F. Example 4. The Solar System and The Universe**

As energy carriers of the Universe, free photons carry energy between matters, and in systems.

Since the Solar System is in a dynamic least energy formation<sup>2</sup>, for its planets, the total energy coming in from the Sun equals the total energy going out to space, although photons from the Sun carry higher energy on average (mostly visible) than photons from the planets (mostly invisible). All this energy transfer is done by free photons.

So, free photons, as energy carriers, are responsible for the dynamic least energy formation of the Solar System.

In fact, free photons are responsible for the dynamic least energy formation of the whole Universe.

## References

1. Yuen, B. Demetriadou, A. (2024), Exact Quantum Electrodynamics of Radiative Photonic Environments. *Phys. Rev. Lett.* 133, 203604.  
<https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.133.203604>
2. Wang, C. (2024), The Principles of the Universe. *Academia.edu*  
[https://www.academia.edu/125676003/The Principles of the Universe](https://www.academia.edu/125676003/The_Principles_of_the_Universe)
3. Austern, M. Chase, Gibbs, S. P. Koks, D. (1992, last updated 2008). What is the mass of a photon? *Physics FAQ*.  
[https://www.desy.de/user/projects/Physics/ParticleAndNuclear/photon\\_mass.html](https://www.desy.de/user/projects/Physics/ParticleAndNuclear/photon_mass.html)
4. Atkinson, V. (2024), Is it possible to reach absolute zero? *Live Science*.  
<https://www.livescience.com/physics-mathematics/is-it-possible-to-reach-absolute-zero>
5. The Editors of Encyclopedia Britannica (2024), Speed of Light.  
<https://www.britannica.com/science/speed-of-light>
6. NASA (2023), Visible Light. [https://science.nasa.gov/ems/09\\_visiblelight/](https://science.nasa.gov/ems/09_visiblelight/)
7. M. Williams (2016), [How does light travel?](#) *Phys.org*
8. Teaching Advanced Physics (2024), Wave particle duality.  
<https://spark.iop.org/collections/wave-particle-duality>
9. ARPANSA (2024), Gamma radiation. <https://www.arpansa.gov.au/understanding-radiation/what-is-radiation/ionising-radiation/gamma-radiation>
10. Levy, J. (2024), Basic concepts for a fundamental aether theory.  
<https://arxiv.org/pdf/physics/0604207>
11. L. J. Wang (2020), Ether Dynamics and Unification of Gravitational and Electromagnetic forces. *Global Journal of Science Frontier Research*, **Volume 20 Issue 13 Version 1.0 Year 2020**.