

# Inertialess Velocity Change and a Two Particle Model of the Photon

DAVID LEIGH SPENCER — MBA,  
University of Colorado  
(Boulder, Colorado, USA)

E-mail: dlshome@verizon.net

*Building on the idea presented earlier that the gravitational fields outside of basic particles are those particles' inertia and that acceleration results only from inertial field imbalances, inertialess velocity changes may result when motivation for motion arises from within basic particles. A two particle model of the photon shows how this might work.*

*Key Words: Basic Particle, Electron, Inertialess, Pair Production, Parallel Universe, Photon, Photon Model, Two Particle Photon Model, Wave-Particle Duality.*

## Introduction

In an earlier paper, I introduced a field model in which acceleration resisted inertia, and an object's inertia was nothing more than its own gravitational field [Spencer, 2016]. In that model a basic particle accelerates only when either its gravitational field is partially offset by another one, or its shape becomes distorted by an electromagnetic field. This model explained why we observe inertia whenever the motive force or cause of an object's motion originates outside of its basic particles. In this article, I will examine what might happen when the motive for motion comes from within them.

## The Two Particle Photon Model

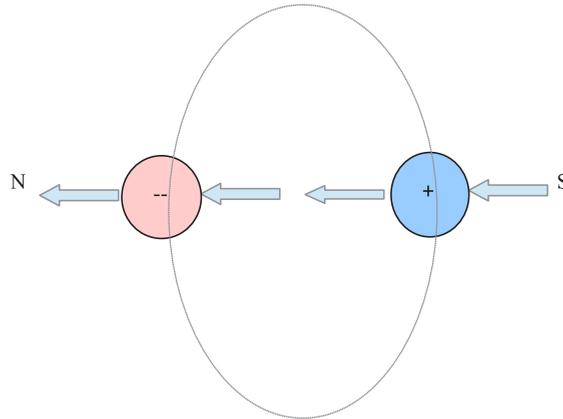
Imagine a photon as a system consisting of two basic particles, an electrostatic plus and minus, orbiting about each other in a circular or elliptical pattern in a plane perpendicular to the photon's direction of flight. As they orbit each other, the two particles move in opposite directions, and their axes of rotation, magnetic directions, align as shown in Diagram 1.

Lines of force representing the electromagnetic fields inside either of the particles are shown in Diagram 2. If we assume that the substance of the two particles is electrostatic charge, then it follows that those two will attempt to equalize the distribution of electromagnetic field intensities within themselves through motion.

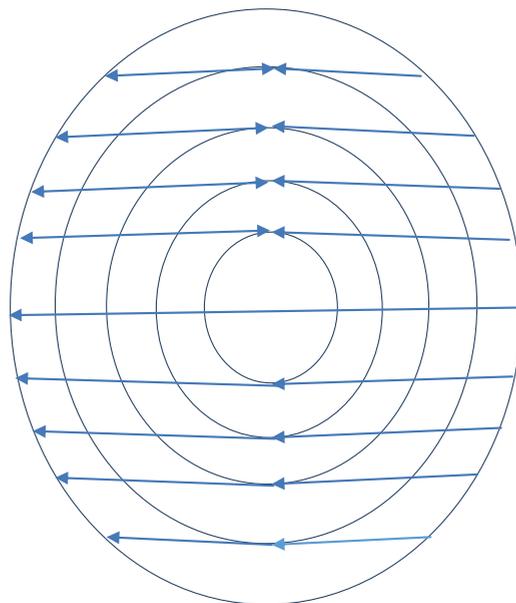
Nothing in the scenario described above would either offset the gravitational field of the two particles or distort their shapes in such a way as to cause acceleration in the direction of their induced movement. Consequently, I believe inertialess velocity change is permitted by the field model. Of course, in order for the system of two particles to become, or later to stop being, a photon, it is necessary for the particles to be able to spontaneously change their axes of rotation as well. Once again, though, the field model does not preclude this.

Assuming that the rest radius of basic particles of this type coincides with their Schwartzchild radius makes the whole thing seem more reasonable. Since time is not

© Spencer, David, 2017



**Diagram 1.** With clockwise orbital movement of the particles, right hand motor rule for the positive and left hand generator rule for the negative particle induces movement into the page. Photons fly when their particles' magnetic directions are aligned perpendicularly to their motions about each other. When that alignment breaks, they stop being photons.



**Diagram 2.** The arrows above represent magnetic direction within either particle. With positive current from orbital motion into the page and magnetic direction from spin across the page, there is field supplementation at the bottom and field cancellation at the top of the particle. This induces motion up the page.

---



---

defined inside that radius, events such as a change in axis of rotation or an inducement to motion when the axis changes can occur without the inconvenience of a time interval. As I discussed in my earlier paper, where time is not defined, everything happens at once. I am making the large assumption here that although the two particles cannot change their axes of spin absolutely simultaneously, they are close enough together to make the difference negligible.

With absolutely no inertia to hold it back, any inducement to motion would have to result in the two particle system instantly achieving the greatest velocity allowed in our universe, the speed of light.

When Maxwell discovered that electromagnetic fields propagated at this speed, he quite reasonably concluded that he had discovered visible light's nature as a small portion of a broader electromagnetic spectrum. The coincidence of velocity seemed to settle the matter. The actual nature of light fell into doubt for a while when first Planck and then Einstein demonstrated that light was emitted and absorbed as discrete packages, but de Broglie's idea of wave-particle duality idea seemed to reconcile everything again. The generally accepted view today is that there is a single electromagnetic spectrum with phenomena that behave like waves at one end and particles at the other. I do not accept this single spectrum view: I believe the velocity of a photon is the speed of light because, as stated above, it cannot be anything else. Electromagnetic fields' propagation at this velocity is not mere coincidence, but it is not proof of a single spectrum either.

### **State Changes**

In this model photons are launched or absorbed when the magnetic direction of a nearby electron, or perhaps something else, causes the spin axes of the particles making up a real or potential photon to change. Apparently, the axes aligned state is not stable; the two particles need each other's support to maintain it.

When an electron and a positron annihilate each other, they always produce two photons; consequently, let us assume that electrons are systems of two particles orbiting about each other held together by the strong force (gravity). Pair Production, or the formation of an electron and a positron from the decay of a high energy photon, seems to contradict this. If we assume, however, that the high energy photon collides with a stationary system of two particles that once was another photon, the two particle electron idea can still work.

When an atom absorbs a photon, one of its electrons moves up to a higher energy state further away from its nucleus and the atom as a whole gains some mass. The Pauli Exclusion Principle states that two electrons may not occupy the same state or configuration in an atom at the same time. In the two particle photon model, this means the electron moves up to a higher shell because the two particle system which used to be a photon (and is now somewhat similar to an electron) takes its former place. It remains between the electron and the nucleus because its particles become polarized in the sense that the negative one spends more time closer to the nucleus and the positive one spends more of its time closer to the electron as the two particles continue to orbit about each other.

A photon does not need to strike the little nucleus in the middle of an atom to get absorbed by it. It does not need to strike the much smaller orbiting electron either. And the mass of free electrons certainly does not seem to vary with the energy state of the atoms from which they came. Consequently, it does not seem unreasonable to say that the mass an atom gains when it absorbs a photon takes the form of a neutral particle, which in turn is a system of particles, residing between the nucleus and an orbiting electron.

Obviously, if we can build electrons and positrons out of similar but oppositely charged basic particles, we can build up larger systems of particles as well. If this is how the world works, then all neutral particles are systems of charged particles. Why something with as many of these particles as a proton or neutron is so stable and common, I do not know. It may be that more than two basic types exist after all.

Another very real difficulty of this theory is that it does not explain why only some orbital distances from atomic nuclei are acceptable to electrons. I may speculate that, due to some peculiarity in the n-body problem, only even multiples of an electron's particles' orbital period about each other result in stable orbits, but I cannot begin to prove this.

### **Of Matter and Energy**

Matter that is temporarily without inertia for a given direction is not the same thing as energy. Consequently, this model is at odds with very much of modern theory. I am comfortable with that. The field model makes sense, and the rest follows from it.

In my earlier paper I stated that because basic particles contained within themselves the potential to accelerate themselves, they possessed the potential to perform work (energy) while at rest. It seemed quite reasonable to say that the measure of this energy was the familiar *mcc*. I do not see any compelling reason to extend its meaning any further than this anymore. The old conservation of energy and conservation of matter laws seem entirely adequate to me again.

The product of Planck's Constant and the frequency of a photon is the measure of the quantum leap it can induce in an orbiting electron. In the two particle photon model, the reason that higher frequency photons kick electrons further than low frequency ones do is that their particles move faster in their orbital movements about each other. When a positive particle is moving toward a nucleus and a negative one toward an electron, the faster they are moving in their various directions, the harder the electron will end up getting kicked.

### **Testing The Model**

I think it should be possible to discover whether or not nature conforms to the two particle photon model in at least two ways. First, although the speed of different photons' particles in their orbits may vary with their frequencies, all atoms should gain or lose about one electron's worth of mass when they absorb or emit a photon of any frequency. Second, pair production should not occur between an atom's nucleus and its electrons unless at least one of these electrons is in something higher than its base state.

It may also be possible to prove the matter by focusing a large laser beam into as small an area as possible with a mirror or a lens. If the frequency chosen for the laser light is too low for current theory to allow two of its photon to produce a pair, and electrons and positrons result, this would suggest that any pair of photons may produce a pair.

Finally, it almost goes without saying that if the model is correct we will never find any evidence supporting the existence of gravitons.

### **Philosophical Considerations**

If this model is right and wave-particle duality is wrong, then we are reduced to wondering once again just what is waving when we contemplate electromagnetic fields. The space between basic particles exists and has meaning to us because it is between them, but we still do not, and perhaps cannot, truly comprehend its nature.

If matter and energy are truly not equivalent, then we have a right to feel disappointed. The world is not as we thought. Atomic energy is not the near magic conversion of matter into energy, but just the release of energy, which was bound up at the sub-atomic level. We are diminished.

The theoretical underpinnings for the various multiple universe concepts all stem from one common root: wave-particle duality. Consequently, if we give up that idea, then we are left with only our own finite universe to comfort us. Once again, this may feel strangely disappointing, but it is the only one we would ever perceive anyway.

It is philosophically satisfying to contemplate a universe consisting of only two types of basic particle, electrostatic pluses and minuses. This simple model may not be correct. However, if it is not then another simple model will be because at its most elemental level the universe is, and must be, elementary. As Albert Einstein put it, "God is subtle, but not malicious."



## References

Spencer, David Leigh. A Simple Model of Fields Including The Strong or Nuclear Force And A Cosmological Speculation. *Philosophy and Cosmology* 2016, Volume 17.