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THE NATURE OF LIGHT

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I have written a lot of papers about light, but no general overview. My papers have become so voluminous, some may find it hard to get a handle on them. This may help. Rather than condense my explanation of light into laws, propositions, or corollaries, I am going to condense it to corrections to errors. So much physics had come before me, that I have necessarily advanced mainly by correcting mistakes. Plus, you can only really understand the importance of my new ideas by comparing them to the ones they are replacing. They are so simple, that listed on their own they may seem unremarkable at a glance. As a matter of logic, they are so natural and easy you may assume they have been common knowledge all along, and that someone like me couldn't possibly have thought of them. But when promoted next to mainstream or historical theory, their real beauty may become more evident and inescapable.

Error 1: Light travels via an ether. This was the theory up to the time of Einstein, and is still prevalent. Since then it has been mostly replaced in the mainstream by **Error 2: light travels via no ether**. Both are wrong, because light IS the ether. Light is both the background and the ether, and everything travels relative to that. This is what Einstein's theories imply, though that fact is rarely stressed. Almost always, Relativity is used to ditch the ether. But by building his theories around the constant c , and having everything move relative to light, Einstein was showing that light was the ether. Early on, [he occasionally admitted that](#).

Error 3a: There can't be an ether, because if there were it would cause refraction. This error goes all the way back to Kepler and before. But there would be refraction only if the ether were atomic or ionic. Only substance of that sort is known to cause refraction. But light doesn't refract itself. So if the ether is photonic, no refraction would be expected.

Error 3b: The Michelson-Morley interferometer proved there is no ether. No, the interferometer proved nothing, because it was a flawed instrument, [based on a flawed diagram](#). It was guaranteed to find a null outcome. Null outcomes are always tricky, because they may be proof against a theory, *or* they may be the result of a flawed set-up. Flawed set-ups always cause null outcomes, you know. For many other flaws in the early years of this problem, [you may consult this paper of mine](#).

Error 4a: Light travels as a field wave. No. Although light has a wave, it isn't a field wave. A field wave is something like a water wave, in which fields of particles create patterns relative to a background. Light isn't a wave of that sort. Light is **spin wave**, and each photon carries the wave because it is spinning. At the level of the photon, the wavelength is just the radius of spin of the photon, which in the simplest case is just the radius of the photon itself. [That wavelength is then stretched out by the motion of the particle](#), which is why we multiply by c^2 . One of those c 's is the linear velocity of the photon and the other is the spin velocity. Both stretch the apparent radius of spin relative to an observer at rest. This explains why a single photon can act like a wave, as in the [two-slit experiment](#), and many other things.

Error 4b: Light's nature can be expressed as a wave/particle duality, with light sometimes acting as a wave and sometimes as a particle. No, that squishy statement is bred of confusion and breeds confusion. It is the result of centuries of misreading experiments. Light *always* acts as a real particle with real spin, because that is what it is. Yes, if your experiment is designed to detect wave results, you will find those, and if it is designed to detect particles, it will find those. But there is no mystery in that and no unfathomable duality involved. Only straightforward mechanics.

Error 5: The photon is a point particle with no radius and no mass. No, there is no such thing as a point particle, by definition of particle. Everything that exists must have extension. Likewise, no particle with energy can be massless. Energy is a function of mass, by definition and by all the equations and experiments we know, so if a particle has energy, it must have mass. Saying the photon has no rest mass is just to say it is never at rest, which an empty saying. We already know that. But the photon must have moving mass, otherwise it could have no moving energy. I have calculated the [mass of the photon](#), which is being hidden (on purpose) by Planck's constant. [The radius is likewise easy to calculate from G.](#)

Error 6: Light, Charge, and Heat are three different things. No, charge is just light being recycled through matter. Charge peaks in the infrared on Earth because elements in this local field recycle at that energy. Charge naturally tunes itself to the energy of the local field. So charge is also heat.

Error 7: the Lagrangian and Hamiltonian express kinetic and potential energies. No. Although these equations are close to being correct, they have nothing to do with either kinetic energy or potential energy. [The first term mimics the form of kinetic energy](#), but that is just an accident of history, whereby [poorly defined Newtonian variables got conflated over the centuries](#). Besides, you can't subtract potential energy from kinetic energy in a field equation, since they express the same thing. The kinetic energy term in the Hamiltonian is simply a field correction to the other term, and that correction is necessary because the other term (the main term) is a unified field equation. What they are calling the potential energy term in the Hamiltonian is actually Newton's main field equation, based on the gravitational field equation. That is known. But [I have proved it was already unified](#), and has always contained the charge field. G is then a transform (size scaler) between the charge field and gravitational field. These are acceleration fields, and [acceleration fields don't automatically scale](#) up and down in size like velocity fields.

Unknown to Newton, Lagrange, Hamilton, or anyone else, Newton's gravity equation was not only unified, but incomplete. It required a second term as correction because G lacked a degree of freedom. The field equation depended on the size of the field, and that is because at sizes nearer the quantum realm, the photon would be relatively bigger in the field, while at larger sizes it would be smaller. Since G was always a scaler between the photon (charge) field and the atomic (matter) field, it was important to include your size in the equation. If you were measuring or calculating at the atomic level, the scaler would work differently than if you were measuring or calculating at a stellar level, you see. Again, this is because the equations are scaling *accelerations*.

I mention the Hamiltonian in a paper on light because you now see light is *in* the Hamiltonian as charge. The Hamiltonian is a dual field, but it is dual because it now includes the charge field. This means it is dual in a different and more important sense than it was before. Before it was dual only in that it expressed two terms, but since both terms were thought to express the same field, it wasn't really dual. It was either gravity only or EM only. Now it is always unified, no matter whether you are using it in cosmology [or quantum mechanics](#).

Error 8a: Superposition is mysterious and can only be solved by sum-overs or spooky tricks. No, superposition is not mysterious or spooky at all, and it can be explained and [visualized with simple diagrams](#). I have explained it with stacked spins, where second spins double the radius of the first. The current wavefunction already tries to do this, it simply fails. It fails because [it lacks a degree of freedom](#), and because it doesn't include simple gyroscopic rules of spin stacking.

Error 8b: Part of the nature of light is entanglement, which can only be explained by spooky forces at a distance, disproving both reality and locality. No and a thousand times no. [Entanglement can be very simply explained by the spin of the photons](#), and the fact that photons arising from the same event will be spin-matched in some way. This spin-matching will persist, even over long distances, unless the photons are spun up or spun down for some reason.

Error 9: The Photon only has one state. Since the photon is currently thought to be a point, it can't have spin and therefore can't show any heterogeneity. But since we now know it must have a radius and spin, it must be capable of multiple states. In the simplest case, it can be up or down. I have called these states photon and antiphoton. The existence of these two states allows us to easily explain a whole raft of things that were previously mysterious, including magnetism, the multipoles of the nucleus, [the positron](#), neutrinos, [magnetic reconnection](#), the upside-down or wonky profiles of many planets and moons, [opposition surge](#), charge conjugation, [Rayleigh scattering](#), parity loss, and on and on.

Error 10: The Charge Field and the Electromagnetic Field are basically the same thing. Maxwell started this confusion on his own authority, and it has never been corrected. [But the two fields are completely separate](#). The charge field is photons, the EM field is ions. The ions are carried on a sea of photons, so the photons are primary. In terms of Maxwell's equations, EM is the E and B fields, while charge is the D field. But D is primary. Closely related is **Error 11: Light travels on or in the EM field.** No, just the reverse. The EM field travels in the light field. Light is the base field and causes everything. Everything is built up from light, both as a matter of particles and as a matter of field influences. All motion is caused by light, and all matter is built up from photons.

Error 12: In the absence of matter you have a vacuum or void. No, the charge field remains even in the absence of matter. You cannot create a charge vacuum, you can only create a matter vacuum, that is to say a dearth of nuclei and ions. For this reason, there is no such thing as absolute zero. Absolute zero would be zero warmth or heat, but since charge is everywhere, there is always heat. Even in the space between galaxies, there is heat and warmth, though it is far below the heat here. Heat rises greatly in the vicinity of matter, because matter attracts and channels charge, greatly raising its densities. So, relative to what absolute zero would really be—where no charge existed—absolute zero here (-273C) is actually tropical. That is just the minimum temperature here, so it is a local thing.

Error 13: The space between planets is empty, or nearly so. The mainstream now admits to a solar wind, but beyond that it still insists space in the solar system is pretty much empty. This is gloriously false, since the solar wind travels on the powerful charge field. Even if the Sun stopped emitting ions altogether, the solar system would still be stiff with charge, both from the Sun and from the Galactic Core.

Error 14: If there is an EM field in the Solar System, it is extremely tenuous. No, it isn't tenuous at all. It is incredibly powerful. At the fundamental level, it is not an EM field, it is a charge field, and that ambient charge field outweighs the matter field in it by 19 to 1. You will ask how we can weigh the charge field, but it is quite simple, and [I have done it using only mainstream equations](#). You don't

use the tiny mass of the photon and sum up, you must use the energy equivalence of the photon, which includes its speed. You weigh or compare the energies of the two fields. Although the photon has a very low mass, it has a very high energy, as we know. So you have to compare energies, not masses. If you do that, you not only find fantastic energies even in “empty” space, [you solve the dark matter problem](#) all at once. [Dark matter](#) also gives us the number 19 to 1, you know.

Error 15: The influences in Celestial Mechanics are gravity only. Nope, not even close. Celestial Mechanics is a Unified Field, and charge is always a major partner. In fact, many influences, including tidal influences, are mainly charge field influences. That's right, tides on Earth are not caused by gravity. [They are mainly caused by charge](#). That is, by light moving from Moon to Earth.

Error 16: In orbital mechanics, the cause of the ellipse is well understood, being the result of distance of initial capture and a gravitational well. No, the cause of the ellipse has always been either not understood or misunderstood, since a gravity-only field cannot support an ellipse. The orbiter is out of balance for most of the orbit as a matter of forces, so it should immediately escape. The stability of the orbit is never explained, and the idea of a gravitational well was always an absurdity. The ellipse [can only be explained as the balancing of two fields](#), and I have shown the second field is charge/light.

Error 17: The heat of the Earth's core is caused by residual heat of formation and pressure. No, there has never been any evidence of that, and huge piles of evidence against it. As with the nucleus, the [Earth's heat comes from charge recycling](#). The Earth continuously pulls in charge from the Sun, planets, and Galactic Core at its poles and recycles them through its body. Like everything else that exists, the Earth is a light-engine.

Error 18: Nuclear and Molecular structures are caused by electron configurations, sharing, swapping, or potentials. No, [all nuclear and molecular structures are caused by charge channeling](#) through and between nuclei. That is to say, the nucleus channels real photons through its body on defined paths via vortices caused by spin. As such, it acts like an engine, feeding off the ambient charge field. The main paths through the nucleus are pole-to-equator and pole-to-pole, and all paths are bi-directional. In other words, the nucleus is channeling both photons and antiphotons, with antiphotons always opposing the traffic of photons. Although photon paths are mainly inter-penetrable, on the pole the two paths can superimpose or collide, creating spin ups. This is the root cause of electricity and magnetism.

Error 19: Color is made up of photons only. No, [I have shown that color](#) is actually made up of both photons and antiphotons, with some colors being anti to others. This makes color theory twice as complex as it already was, but it can still [all be explained with spin mechanics](#).

Error 20: All photons are the same size. If photons were point particles, they would have to be, wouldn't they? But they aren't. Visible photons have different radii, and more energetic photons like X and gamma actually have extra spins. They are MUCH larger, which is why they are so powerful. If you stack on another spin above that, the photon becomes too large to go c, and is no longer a photon, by definition. It then becomes an electron.

Error 21: In some events, electrons emit photons. No, in those events, the electron is being hit, is losing an outer spin, and is *becoming* a photon. That is why in these events the “emitted” photon is often an X-ray. An X-ray is a spin-stripped electron.

I could continue with these errors pretty much indefinitely, but the ones above are the ones you should

comprehend first. They are among the most fundamental. You can take the links to see many others. Also consult the subsection on light on my front page.