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Black-body Radiation

is

the Charge Field

by Miles Mathis

I have mentioned before that the charge field is represented by black-body radiation, but only in passing. I haven't given it the attention it deserved, or its own paper, so here it is. I guess I thought it was implicit, or that others could see it immediately, but I find now is a good time to make it explicit, and to sort of shout it out. Now that I have new papers up on the Drude-Sommerfeld model and the Avogadro's constant and so on, it is time show that black-body radiation has always been equivalent to charge.

I find it surprising that the mainstream never made this link. Possibly the reason they never have is again simply due to bad terminology. Black-body radiation has been taught as E/M radiation from the beginning, but strictly it *isn't* E/M radiation. As I made very clear in my recent papers on Maxwell, the charge field and the E/M field are not the same. The E/M field, rigorously defined, is ions. Photons are not ions. Black-body radiation is not ions. It is light. Light is now called the electromagnetic spectrum, but light *isn't* the electromagnetic spectrum. Light is the light spectrum, and the main particle is the photon. The main particle of the E/M field is the electron, an ion. The two fields have been conflated, but they are not equivalent. As I have shown, the light field or charge field underlies the E/M field, and actually drives it. The E/M field is a function of the charge field, but the charge field can exist without any ions. We see that with black-body radiation, which is photons, not ions. Black-body radiation doesn't require an ionized body.

As I have shown, Maxwell started this confusion by not seeing the difference between E/M and charge. He failed to define his displacement field, or to assign it to anything or to any particles, so it got buried immediately. The electric and magnetic fields became much more famous, and they were attached to the electron—when they were given a field particle at all. Both charge and the photon got lost in the shuffle, and the photon didn't raise its head again until the photoelectric effect, near the turn of the

century. Here again, though, the terminology got in the way and deflected physicists from seeing what was really going on. The photo-*electric* effect isn't really electric at all. It is obviously photonic. But the name made physicists think the photon was just some by-product of the more important E/M field. They had been taught this by Maxwell, and Einstein seemed to confirm it. But it never was. The photon is the field particle of the *charge* field, and the charge field *underlies* and drives the E/M field. Light is not a wave in the E/M field. Just the opposite: ions are particles in the light field. Light is the primary field and E/M is an effect of that underlying field. The charge field is Maxwell's displacement field, and the displacement field is actually more fundamental and more important than the E/M field. The E/M field is just an effect. The charge field is the cause of everything.

This mistake was further cemented by Bohr, who conflated the photon and the electron in his equations. Bohr actually made a fundamental mathematical error in the derivation of the Bohr equations, when he mistook momentum for change in momentum, fudging from one variable to the other. I have proven this is great detail, going through the derivations line by line. Since one variable represented the photon and one the electron, the two particles were conflated or combined in the equations. The photon was mistaken for the electron, and all of quantum mechanics was based on quantum energy steps on the electron when it should have been based on a quantized photon. So the photon and the charge field was buried once again. It was so thoroughly buried by the late 1920's that it has never resurfaced until I dug it up.

Any close look at black-body radiation should point us at the charge field, since the radiation has always been known to be photonic. Why should all bodies be emitting photonic radiation? Where is it coming from? How does it conserve energy? If atoms and molecules are mainly E/M field bodies, and if they are reprocessing incoming heat and re-emitting it as black-body radiation, why wouldn't black-body radiation be composed of ions, especially electrons? Atoms are already composed of electrons, so the most direct thing would be to emit *them*, right? If the electrons are already quantized, the body should be able to emit electrons at any energy level required. So why photons, and where are the photons coming from? [See more on this quantization below.]

My theory answers all these questions in the most direct way: photons don't have to be created, because they already exist in all bodies as charge. Charge is photons and photons are charge.

If this wasn't clear before I came along, my calculations have confirmed it almost beyond any doubt. Many years ago I surmised that Newton's equation was already unified, that it contained charge, and that G was the transform between the charge field and the solo gravity field. If we take G as the size transform between the two fields—taking the volume of one down to the density of the other—we find that the charge photon must peak at a size G times less than the proton. A simple calculation then shows that average charge photon is in the infrared, with a wavelength of about 2μm.

Amazingly, this is where black-body radiation also peaks:

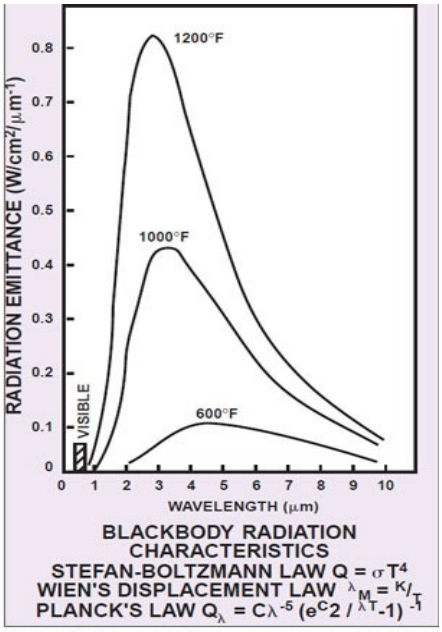

Figure 1: As shown in curves representing the distribution of energy emitted by blackbodies

Ask the mainstream *why* black-body radiation is photonic and why it peaks in the infrared. Do you think they can link it to charge, Newton's equation, Maxwell's equations, and unification? No, they just leave it hanging.

Another calculation that strongly indicates my theory is correct is the peak of gray body emissivity at .95 of black-body emissivity. Infrared thermometers are commonly set at .95. Ask the mainstream why that is and they will tell you it matches data—but no other answer. I can tell you the real field answer, because I have used the same short set of equations to explain both dark matter and this problem.

$e = 1.602 \times 10^{-19}$ C
1C = 2×10^{-7} kg/s (see definition of Ampere to find this number in the mainstream)
$e = 3.204 \times 10^{-26}$ kg/s

I first unveiled those three lines in my MOND paper several years ago. That third number is important, because it shows that the proton is recycling 19 times its own mass in charge every second. And 19 times is the same as 95%. Charge is 95% of the total energy field of the universe. That immediately solves the dark matter problem, by showing that charge is the "hidden sector" field. It has been hidden by a century of bad math and bad terminology. But it also solves the IR thermometer problem, because it gives us the .95 number here as well. The reason real bodies can only approach 95% of a black body is that real bodies are composed of baryonic matter, not just compressed photons. Since baryonic matter is taking up 5% of the energy field, that 5% isn't available to be recycled. So a real body can't be a perfect black body. A perfect black body would have to be composed of compressed photons. The black body would have to be *nothing but* charge. Since that is impossible (as far as we know), real radiation hits a limit at 95%.

I will be told that emissivity exceeds 95% in some cases, but if we study those cases, not only do we get more confirmation of my theories, we learn even more new things. For instance, if you take this link, you find that soil may exceed 95% emissivity. Soil. That's curious, wouldn't you say? You may

ask, “Is that soil that is still in the ground, or *any* soil?” Turns out, the soil that exceeds .95 is soil *still in the ground*, and the IR thermometer is of course pointing down to the Earth to take the reading. By my theory, that must skew the measurement, since charge is coming out of the Earth. The Earth itself is recycling charge, so soil still in the ground will be transmitting this charge recycling through the Earth.

It will be asked of me, “If black-body radiation is charge, and charge peaks in the IR, then why do very hot bodies peak in the visible?” This is explained very simply by my quantum spin equation, by which particles stack on new spins at higher energies. I have shown this is the physical and mechanical explanation of quantization, but the fundamental quantized particle is the photon, not the electron. Since the photon gains energy via quantization in this way, at a given charge energy level, the charge photons will stack on another spin, becoming more energetic. They each then have more radius, more angular momentum, and more of what we now call frequency. In short, they move up the energy scale, moving from IR to visible. To see how the equation corrects and extends historical equations, you may see how I added this photon quantization to the ideal gas law in a recent paper.

To see exactly how my explanation of black-body radiation extends and corrects historical theory, let us go to Wikipedia to compare my theory to current encyclopedia entries. In the subsection titled “Explanation,” we see this as the first paragraph:

All matter emits electromagnetic radiation when it has a temperature above absolute zero. The radiation represents a conversion of a body's thermal energy into electromagnetic energy, and is therefore called thermal radiation. It is a spontaneous process of radiative distribution of entropy.

You can see that my theory already has more content at the fundamental level than current theory. Let us study the second sentence closely. Black-body radiation is defined as E/M radiation that was converted from thermal energy. But if thermal energy isn't E/M energy, what is it? We will be told it is molecular or atomic energy from motion, as in wiggling, Brownian motion, etc. But what causes that? Heat from outside. But what causes that? What is heat if not some sort of E/M energy? Aren't we also taught that E/M is the main energy at the quantum level? If so, then we have a problem here. We are being led in circles by these definitions.

My theory solves this by joining the two energies at the foundational level, giving them to the same field particle. But to do this, we have to be more rigorous in our terms. Black-body radiation is not E/M radiation, since we should save that term for ionic radiation. What we have here is photonic radiation, as I reminded you above. Well, I have shown that heat and thermal energy are also photonic. They are an outcome of an underlying charge field, and the charge field is the same as the photon field. Planck's spectrum is just an extended version of the charge field. The charge field IS the photon field IS the light spectrum. So we should change sentence two to this:

Black-body radiation represents *a recycling of charge*. Heat comes into a body from the outside, via the charge field. This raises the energy of the body by increasing the body's internal charge density. The body then re-emits a part of this excess energy in the light spectrum, which is also charge.

We have always had clear evidence of that, since of course heat is also infrared. Heat may be carrying ions, since charge normally does. But heat is defined by the charge stream carrying it. You should be surprised that Planck and others never noticed that both heat and black-body radiation were peaking in the infrared. This was the clear signal that they were linked. We don't require any conversion from thermal energy to E/M energy. We only need to follow the charge field.

The Draper point also confirms my analysis, since my quantized photon requires that there be a temperature at which the charge photons stack on another spin. In other words, we don't see a continuum or a slow change. We see a field jump at a given energy level, and the Draper point is one of those energy levels (798K). You can also see clear evidence of this from the colors at higher temperatures. Black-body radiation doesn't move continuously through the visible band, giving us yellow, green, cyan, blue and purple. Instead, it jumps from IR to red to white, with only a mix of red and white between. More evidence comes from the fact that the light from very high-temperature black-body radiation never becomes violet or disappears into the UV and above. It just becomes whiter and more intense, seeming to us to turn a blue-white. However, this blue-white should not be confused with prismatic blue, since nothing about the radiation matches the energy of prismatic blue. It would seem that intense white appears slightly bluish to our eyes, perhaps from the complete lack of reds.

The reason this last fact confirms my theory is that, given current theory, we would expect the peak to move above the visible. If the quantization of energy matched current models, there would be nothing to stop the peak from moving above the visible at very high temperatures. What keeps it from doing so in my quantum spin theory is that the quantization hits a limit when the IR photon has stacked on four spins. It *can* stack on a fifth, but at that point the particle is no longer a photon, so it doesn't push the peak above the visible. The radius of the charge photon is now so great that the photon cannot maintain c. It suffers too many collisions in the field to maintain c, and its linear velocity drops, becoming after that dependent upon its mass and its field surroundings. In short, the photon becomes an electron. This drop in velocity prevents the radiation peak from continuing to climb. Instead, a feedback mechanism is created, and the high temperature strips spins from newly created electrons about as fast as they can be created. This holds the peak at a limit, and any more added photons (or added temperature) will only increase the density of blue-white radiation.

Since the black-body phenomenon ignores the composition of the body (its baryonic or nuclear composition, or molecular composition), it acts somewhat like an ideal gas law. My theory explains this, too. Since it is the charge field that determines both the quantization and the energy levels, and since the charge field is 95% of the total energy field, the molecular composition will hardly matter. Given current theory, this shouldn't be true. If thermal energy is molecular motion, then larger molecules should have more inertia—more resistance to increased energy or temperature—than smaller molecules. Atomic weight should matter, as should the density of the substance. The only way the density and mass of the matter couldn't matter is if the matter field weren't the fundamental field here. You see how this ties into the dark matter problem, since the mainstream has a dark matter problem even here. As with dark matter, they have some complex mathematical explanations, it is true, but they all have the smell of fudge. None offer a straightforward mechanical explanation of the problem as I do.

Interestingly, when describing a black-body cavity, the interior *is* sometimes described as a photon gas. However, this photon gas is not then linked to the charge field in any way. It is never explained where this photon gas comes from, or how it enters any of the field equations of Maxwell, Schrodinger, Einstein, Newton, or others. The photons are taken to come from the external light field, but no attempt is ever made to weigh this field or even to determine its universal energy. It is just brought in when it is needed and then ignored afterwards. Because the photon is given a zero mass in the gauge equations, no one ever thinks to include “normal” photons in the field equations—except as virtual particles, quasiparticles, or other mathematical and theoretical fudges.

To show you evidence of this theoretical fudge, we only have to go to the Wikipedia page on Planck's

law, where we find this:

Quantum theoretical explanation of Planck's law views the radiation as a gas of massless, uncharged, bosonic particles, namely photons, in thermodynamic equilibrium. Photons are viewed as the carriers of the electromagnetic interaction between electrically charged elementary particles. Photon numbers are not conserved. Photons are created or annihilated in the right numbers and with the right energies to fill the cavity with the Planck distribution.

Not only are standard-model photons massless, they are *nonconserved*. What does that mean? It means you can fill any hole you like with them, pull them out of the vacuum anytime you like in any amount, and generally fudge your equations to any extent your heart desires. It is their lack of mass in the field equations that allows them to be nonconserved, since zero any of number of times is still zero. This is exactly why current theory resists giving the photon a real moving mass or mass equivalence. Not only would it throw off their gauges and their definitions of things like bosons, but it would make this non-conservation illegal. They even admit that, in a way. They say, "photons are created or annihilated in the right numbers and with the right energies" to match data. That is back-engineered physics at its best, and physicists must love having a particle that can fill any hole "with the right energy." Have a hole in your equation? Just propose more photons to fill it. Have an electron with too little energy, or too much? Fill the hole with a photon. Can't find a photon with the right energy? Well, make up a phonon—a quasi-particle with photon characteristics but even more variation. With photons you don't have to conserve numbers or masses, but with phonons you don't even have to conserve energy. Physicists now have many particles that can do the job they need filling their equation holes, then disappear afterwards without a trace.

You should also remember that although textbooks and Wikipedia tell you current theory has a quantized photon, it actually doesn't. What they mean when they say that is that in current theory the photon is taken *as the quantum*. The photon energy acts as the quantization of the electron. But it is the electron that is actually quantized in current theory. What I mean is, in the current wavefunction, the electron energy or momentum is given steps. These steps are assigned to a change in momentum, and they can take only quantized values. The electron then absorbs or releases a photon to go from one step to another. See my last papers on Bohr's equations for a full analysis of this. So although the photon takes part in the quantization, the photon itself is not quantized. But in my theory, the photon is quantized. The photon has energy levels due to spin stacking, and that is what we are seeing here in this black-body problem (and all other quantization problems). This is what enables my theory to explain the color levels in black-body radiation.

Current theory admits the quantized nature of black-body radiation, but since black-body radiation is photonic, the quantization can't be explained by it. In the equations of quantum mechanics, the photon can only quantize the electron. But since we don't have any talk of electron radiation or electron fields here, the mainstream doesn't have any explanation of the quantization we see.

Of course, it can propose *post hoc* that the "conversion" of thermal energy to photon radiation is achieved by the electrons in the body—by the old absorption and emission trick—but the mainstream has no evidence of that. In fact, they have pretty conspicuous evidence against it, since if that were the mechanism, the composition of the body would have to matter. According to current theory, different elements have different electron configurations, and therefore electrons at different energy levels. If the orbiting electrons were involved in this quantization, we should see the elemental and orbital energy signatures. But we don't. The mainstream admits the quantization in black-body emission follows pretty much the same curve for all elements or substances, which is strong evidence the

electrons are not involved. This is precisely why they tell you that a black-body cavity can be taken as a photon gas. No orbiting electrons in a photon gas, are there? So where does the quantization come from?

In conclusion, although quantum theory is said to owe its origins to the study of thermal radiation, and especially Kirchhoff's black-body radiation, we have seen that the basic equations of each contradict one another. While black-body radiation indicates a photon field and a quantized photon, quantum theory has defined itself on a quantized orbiting electron and ion field. In current theory, electricity and magnetism are quantities of ions, not photons (see above, where they admit *the mainstream photon is uncharged*). And while the photon and black-body radiation point at the charge field, quantum theory has all but ignored the charge field, using it only as a virtual subfield. Mainstream theory has no fundamental particle of the charge field, no explanation of quantization in the charge field, and no mechanics in the charge field. For the mainstream, charge has remained an unassigned potential to the present day, and when pressed the mainstream takes the entire field underground, expressing it in terms of virtual particles and interactions. This mistake has caused the dark matter problem, the vacuum catastrophe, the failure of unification, and is the source of almost every other meltdown in current physics. None of these problems or any others are going to be solved until the charge field is defined in mechanical terms and brought out of the dark.