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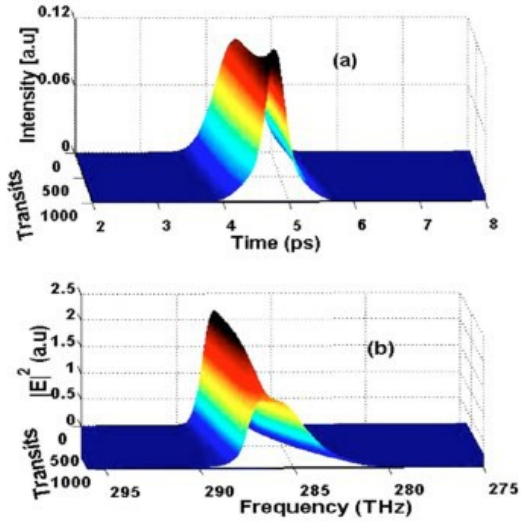
The Stark Effect

A CHARGE EXPLANATION

including a new explanation of spectral lines



by Miles Mathis

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I have been sitting on this one a while, since I thought its charge solution was so obvious, given my new theory of charge channeling by the nucleus. Anyone who understands my theory could probably write this paper himself, but I suppose that doesn't free me from writing it. It is unlikely anyone is going to write it if I don't.

As you may know, the Stark Effect is a splitting or shifting of spectral lines when they pass through an electrical field. It was discovered in 1913 by Johannes Stark and Antonino Lo Surdo. We are told that there exists a "quantum mechanical" solution of the effect, but that is false. What exists is pushed math and theory that is as bad as any modern theory, and it isn't *mechanical* in the least. Here is a taste of it from Wikipedia:

An electric field pointing from left to right, for example, tends to pull nuclei to the right and electrons to the left. In another way of viewing it, if an electronic state has its electron disproportionately to the left, its energy is lowered, while if it has the electron disproportionately to the right, its energy is raised.

Sounds a lot like the explanation of the Hall Effect, which we unwound recently. Like that theory, the QM theory beneath the Stark Effect is again heavy with illogic and pushed math, except that here, instead of electron holes, we get perturbation theory. However, since this theory is applied to an electron in orbit, we know it is false from the first word. I have proved that electrons are not orbiting the nucleus, so nothing more needs to be said. But even if that weren't true, the moment they began

applying perturbation theory to the orbit of the electron, someone should have stood up and called them on a grand contradiction. In other places, the standard model theorists tell us treating the electron orbit as an analogue of a planetary orbit is not allowed. If students start asking mechanical questions about the electron orbit, they are shushed with the assurance that there is no analogy. Quantum mechanics is mysterious and doesn't obey any classical rules, they are told. So how is it that the top theorists of QM can talk about the electron shifting in its orbit? Apparently the rules of quantum mechanics only apply to graduate students asking inconvenient questions; they don't apply to the top theorists, who can do anything they want.

[In this case, contemporary theory is coming straight from Schrodinger, who is the one who first used this perturbation math on the problem. The basic solution hasn't changed in many decades. This is unfortunate, because Schrodinger is one of the few quantum physicists I can stomach. He was far more honest than his colleagues in the Bohr-Heisenberg/Pauli/Feynman camp. In fact, he admitted that this math he was applying here was just a stop-gap and a piece of bald heuristics. He admitted that about all his math, including the Schrodinger Equation. He had no idea what was causing the numbers and wasn't happy with the theories of those around him. However, you may be interested to know that he was one of the few who argued that the wavefunction was a measure of charge densities, and that therefore these densities were real. You can't have densities of point particles, you know. On this he was ignored and overruled. He was (mostly) right. He might have solved this problem we are working on if he had followed that clue strongly, but he didn't. Although more honest than his colleagues—and a better mathematician—his visualization skills were nearly as poor.]

Another way we can disprove the mainstream theory immediately is by applying the solution above to Hydrogen. Hydrogen gas creates several emission lines, so it must involve several levels or orbitals, right? Well, if we apply an electrical field to shift those lines via the Stark Effect, all the lines move, not just one, right? But since the applied electrical field has one and only one energy, and the Hydrogen one and only one electron, how does the applied field push the one electron five or more ways at once? The one electron would have to be inhabiting all possible orbitals at once, which is not what they mean by smearing. With a given field energy, the electron should have a given energy itself, not an infinitude of energies, and they know this from other experiments. In other experiments, the bound electron is found to have a specific energy, within the limits of uncertainty. Those limits do not allow us to propose the electron is inhabiting all levels at once.

I will be told the different lines are caused by electrons in *different* atoms in the gas, and that the gas has a wide range of energies. But that would imply that, depending on the actual energy of the field, some lines would be brighter than others. For instance, if the field energy was x, then the line nearest that energy should be very bright, with the other lines going dimmer. That isn't what we see. That is a huge clue, and it led me to my solution below.

A further problem is caused by the fact that in a hot dilute gas of this sort, the electrons should be ionized. The likelihood is very high the electron of Hydrogen isn't in its bound position. It has been blown out of its position at the pole (according to my theory) by the elevated charge field we call heat. Of course this is also fatal to the current and historical theory. It should have always seemed strange that hot gases showed spectral lines instead of solids, when it is solids that would have electrons bound. Hot gases would have electrons ionized, which means they aren't in the orbitals to start with. And yet we see gases showing lines while solids show a continuous spectrum.

Anyone should be able to see that the mainstream solution is naïve in the extreme. They try to hide this at places like Wikipedia by importing some slightly difficult looking perturbation math to confuse the

issue, since most non-specialists won't be able to follow it. They talk about eigenvalues in a gxg matrix, which should make you laugh. You don't need a matrix or these silly operators to solve this, so I can tell you the math posted at Wikipedia on this problem is just a diversion. It was inserted to divert you away from the recognition that their set-up of the problem was a farce.

To say it another way, they always bring in this math of linear transforms, including the bra-ket notations, eigenvalues, matrices and so on, when the problem has nothing to do with linear transforms. The problem is a theoretical one, having to do with the *causes* of motions. We want to know **why** this is happening and **how** it is happening; only *after* we figure that out can we begin to apply vector math to it in any way. And if we don't figure out why and how it is happening, we are bound to apply the wrong vector math to it, as we (they) have.

But instead of admitting that, the big guys like Dirac and Feynman have spent an extraordinary amount of time *denying* it. All the top dogs of the past century have snowed you with the line that "interpretation" doesn't matter: what is important is fitting equations to data. But that is upside down to all sense and to the entire history of physics, including the **definition** of physics. Physics isn't and never was fitted math. Physics is explaining physical phenomena sensibly, with a logical and mechanical requirement and all possible rigor. By that definition, modern physics is no longer physics.

Explaining the Stark Effect by shifting electrons in orbit is among the stupidest things ever proposed in the history of science. Just for a start, if you shift an electron in its orbit, it should escape, according to their own equations. It is held there by a charge field created by the nucleus, remember, and like any other field that field must have potentials. Well, potentials are dependent on distance. If you start shifting orbitals left or right, you have to consider what that entails for the stability of the orbit and for charge separation. For instance, if you shifted the Earth's orbit one way or the other, it would immediately be unstable. The Earth would escape the Sun. But if you start making those points, they will tell you the analogy doesn't hold. The analogy only holds when they wish to do some unsupported math: it doesn't hold when you want to ask them a sensible question.

As you already see, the major problem here is they are trying to solve this as usual with electrons in manufactured orbits, instead of solving it with a real charge field of real photons. They don't realize they have a real charge field to work with, with real characteristics, so they are forced to fudge these electron equations for the millionth time. Before they do any math, they should have to discover the right mechanics, and they haven't done that. From reading current theory, it is clear they have no idea what is actually causing this effect.

But I can tell you. Once again, it is the charge field channeling through the nucleus. Charge isn't some abstract potential, caused by little 1's and -1's sitting on the protons and electrons. Charge is real photons in the field. These photons produce little streams through and around the nucleus, which I call charge channeling. In dozens of previous papers I have shown you how to map this field through a large number of elements and molecules, drawing the diagrams that explain how and why the nucleus channels as it does. In most cases, charge stays in the infrared, since what we call heat is actually the charge field. But elements (and free electrons) can also spin up these photons into the visible and beyond, giving us visible and invisible **emission lines**. Since each element channels in a different way, each element will also produce signature emission lines.

I will return to that mechanism in a moment, but for now I want to continue glossing the mechanism of the Stark Effect. You probably already see that the Stark shift is much easier to explain once you have

real photons moving in the field. It is clear that we don't need electron orbitals being pushed over once we have real charge streams exiting the nucleus. If we now put that nucleus in an electrical field, we have a second real charge stream to work with. The electrical field is also fundamentally a stream of real photons, and it is a stream of photons moving in a particular *linear* direction. To be an electrical field, it must also contain ions. We don't normally call charge fields that contain no ions electrical, although they exist. Our machines deal with ions, so they normally can't detect charge fields with no ions.

Given that, we can solve this problem just as we solved the Hall Effect problem. We have two intersecting fields here, and we can treat them like two intersecting winds. In the roughest analysis, the wind of the electrical field simply blows the exiting charge channels over some amount. Since the emission lines are carried by the exiting charge channels, they will shift.

But we should be far more rigorous. If we look even closer, we see that it isn't free photons in the electrical field colliding with free photons in the channeled field that cause the shift, so my rough analysis wasn't *strictly* correct. The primary cause of most shifts *does* include electrons, which the mainstream can take as a nod in their direction if they like. But, again, *not* electrons in orbitals. As we have seen in many previous papers, electrons *do* attach themselves to the nucleus, but not in the orbitals we are sold. The most important places the electrons go is to the nuclear poles, where they circle in little eddies, as in a drain. As I have put it before, they are like pingpong balls too big to go down the drain, so they simply circle it. You will say, "What is the water in this case?" The water is the photons that are going down the drain. The photons are small enough to recycle through the nucleus, but the electrons are not. The electrons generally want to go where the photons are going, because they are following the same field potentials. They are being carried along by the photons. But they are too big to go through the nucleus (in most cases).

Now, these electrons on the poles are what we call valence electrons, because they are involved in all sorts of phenomena. So in this case, the mainstream is correct: there *are* valence electrons, and they *do* get involved in charge interaction. They get involved because they are in some sense external to the nucleus. While other electrons take positions in the nooks and crannies of the nucleus, these pole electrons are positioned in an external charge eddy, where they are vulnerable to ambient charge. That is to say, they are out in the breeze, and if that breeze becomes strong enough, the electron eddies can be effected. The applied electrical field is a strong breeze of just that sort.

What happens in the Start Effect is that an electrical field coming from the side pushes the electron over a tiny amount, causing a wobble in that circle. It is like a nutation, if you like. That nutation acts to push the entire pole vortex over some small amount.

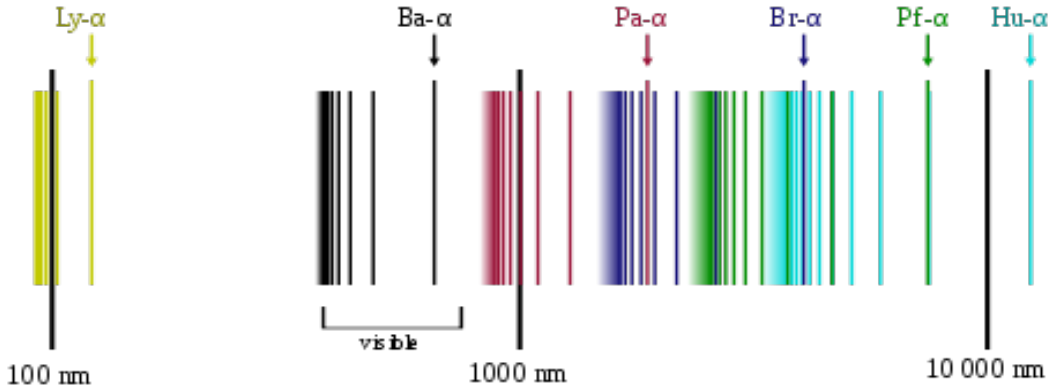
You will say, "why is the mainstream not allowed to shift the electron orbital to the side, but you are?" Well, to start with, my shift is orders of magnitude smaller than theirs. My pole electron is only one or two electrons distant from the nucleus, and it is caught in a powerful and *real* stream of photons. I have already done the math showing the distance of the valence electrons, and it did not require eigenvalues or matrices. It only required simple algebra. Beyond that, the shift required is also orders of magnitude smaller, both in actual distance the electron is shifted, and distance of the shift as a fraction of the orbit. So as a matter of both logic and field mechanics, it is far easier to accept my shift than theirs. They give you no real cause for their orbit and no real cause of the shift. As you will see, all my numbers and math are assignable, where *none* of theirs are.

Also notice that I don't use any analogy to planetary orbits or perturbation theory. They have the gaul

to use a planetary orbit analogy despite that fact that planetary orbits are based on gravity, and they have no gravity to use at the quantum level—according to their own theory. And despite the fact that in most other places they warn us the electron is *not really orbiting*. It is in a probability cloud, we are told. Again, you have to laugh. I use no such analogies because I don't need to. In my theory, the electron is in a vortex, and that vortex is a real field of real particles. So I have no need to use analogies to gravity fields or to potentials of virtual particles.

Once you have this nutation in the polar vortex, caused by the electron, you will naturally have a shift in photons being emitted through that vortex. It is like shifting the center of focus of a light.

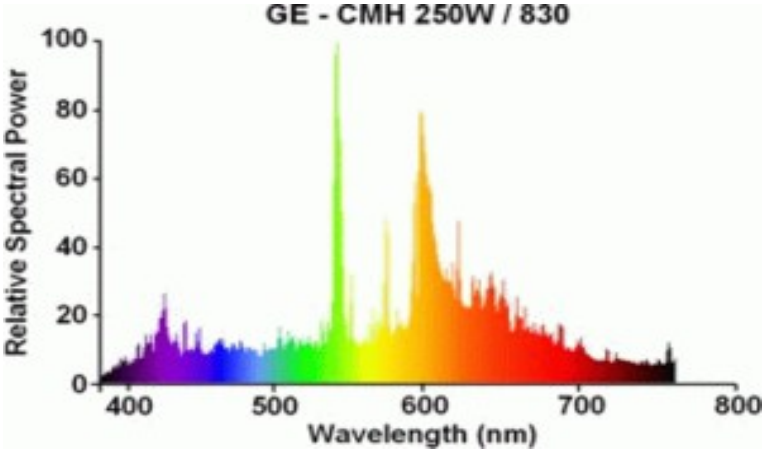
That is one cause of the shift, but what gives us the split? Well, this is a little more complex, since it forces us to return to the spectral lines themselves. You can already see from what I said above that what we are taught about the cause of these lines cannot be the cause. We should have always known that, since at a given energy in the field, Hydrogen should not be able to create multiple lines with only one electron. It should only be able to create one line, since there is no reason for that one electron to be moving between five or more levels. Electrons are supposed to jump levels only when there is a *change* in energy in the field. In fact, at lower constant energies, Hydrogen shows *more* lines, which is counterintuitive. The Paschen series in the infrared has six major lines (other than infinity), while the other series have only five.



This by itself was a clue—another one missed—since I have shown charge peaks in the infrared.

To see another way this spectral line theory is upside down, consider the fact that the Balmer series is supposed to be created by electrons jumping down from higher levels to level 2. As they jump down, they emit a photon, remember? But wait. These spectral lines are created when Hydrogen gas is *excited*. When a gas is excited, it gains energy. So the electrons should be going *up* from level 2 to these higher levels. If the current theory were correct, elements should show spectral lines when they are *cooling*. To get electrons to move down and emit photons, the gas should be heated *and then cooled*. Only then should we see spectral lines. Is that what we find? No.

For instance, here is the emission spectrum of a metal halide lamp:



Let me just ask you this: are lamps normally used for cooling?

Just as we saw with electron bonding theory, this theory of spectral emission is completely upside down, so much so it is a joke in any close analysis.

You will say there must be cooling just beyond the gas or object, which is true. But the electron orbitals are not beyond the gas or object, are they? They are always going to be connected to the atoms themselves, which are not beyond the object. So the theory of spectral lines being caused by electrons in orbits was always a non-starter.

The truth is, electrons don't have to **emit** photons to explain this light we see. The field is already full of photons. Yes, if the photons we are monitoring are above the infrared, then the gas has to be spinning them up into the visible or ultraviolet; but otherwise we don't have to explain the creation of photons. All we have to explain is the spectrum or series at a given energy. You may think this is going to be pretty hard for me to do, since—like the mainstream—I only have one electron in Hydrogen to work with. Yes, but Hydrogen isn't the only thing present in these experiments. We also have the field, which is also real. The field also contains photons and electrons. It is these electrons in the field we will use to explain the series, not the electron in Hydrogen.

As I hope you see, the mainstream gave me the hint with its mistake. Since it was trying to use bound electrons in the gas, it could not use distance from the gas to explain cooling. But since I am using electrons *in the field*, I can. If you have a heated gas or any other hot object, the field will be cooler the further you go from the object. You will say that won't help me, since I am not letting electrons emit photons as they cool. True, but I am letting electrons *recycle* photons. In my theory, everything above the size of the photon is recycling photons, including the electron. The electron is not recycling an equal number of photons as the proton, it is recycling only 1/1821, but it *is* recycling. And the photons it is recycling are dependent on its own energy. This energy of the electron is determined by both its linear speed and its spin speed. A greater spin speed will let it "open up at the pole" to allow more energetic photons to recycle through it.

To see this, let us track a given free electron in the field. If it passes quite close to the Hydrogen atom, it will be more energetic. If is passes at a greater distance, it will be less energetic. This is because the photon streams are more dense nearer the atoms. More density means more photons collide with the electrons. If the electrons and photons are moving in the same direction, the photons carry the electrons along like a boat in a stream. So we have the rough draft of an answer right there. All we

need is to create levels in the field and we will be home.

Why would there be levels in the field around a Hydrogen atom, if there aren't any electron orbitals? There are levels simply due to feedback or resonance between Hydrogen atoms and the ambient field. As I said above, we have two fields here: the field of Hydrogen atoms, which field will have a structure or *spacing*; and the E/M field we are adding to excite the gas. This E/M field will also have a structure, determined by the spacing of electrons (or other ions). When you superimpose these two patterns, you get crests in the field, as in any other wavelike combination.

You will say, "OK, that might give us levels in the field, but the Hydrogen series fall off in a distinct pattern. Your combination of fields wouldn't do that." Yes it would, because, again, we are seeing the fall-off with distance from the gas or other substance (or from the point of heating). As the emission travels from substance to eye or machine, we have a fall-off in temperature. That fall-off in temperature is the same as a drop in energy in the ambient field, which is the same as a less dense E/M field. In other words, the pattern of free electrons in the ambient field *widens*. As that happens, our superimposed crests widen, and levels in our field widen.

This means that the Stark Effect is happening not in the gas itself, but just in front of the gas, in a short cooling area. [You could also say it happens in the forward part of the gas, furthest away from the source of heating]. This naturally explains the widening gaps between lines in each series, because we now see that distance is a function of distance from the gas. The lines are representing not a fall-off in distance from the nucleus, but a fall-off in distance from the gas as a whole.

I showed a partial expression of this when I rewrote the Balmer equation in an earlier paper. There, I showed the equation was in the wrong form, and that it would be clearer written in this form:

$$\lambda = 8r_{\gamma}c^2[1 - (2/m)][1 + (2/m)]$$

In that equation, I have rewritten the constant as a function of the photon, and factored the rest of the equation to make it more obviously a wave equation of the sort I just showed you. The two terms represent the recycled charge field and the ambient charge field. The variable m then stands for the specific grating caused by the meeting of the two fields. In other words, it is function of particle densities, both in the gas and of electrons in the field.

Given a real gas in a real particulate ambient field of a given density, you would *expect* to find levels in the field. In fact, the only way there would *not* be levels in the field is if the field were continuous. That is, if the field were made of zero-radius particles of infinite density. But my charge field is nothing like that. My photons have real size and they do not exist edge to edge. Beyond that, we are tracking electrons in the ambient field here, not photons. Free electrons have an even greater size and a greater spacing.

You will say, "That whole analysis depends on some structure being present. But if both the gas and the ambient field are completely random, no consistent levels will be formed". True as far as it goes, but it doesn't go anywhere, since neither the gas nor the ambient field can possibly be random. At any temperature above zero, charge will create structure, both in itself and in any material, even a gas. To start with, the gas will align its poles to the applied field, to allow for better channeling at the atomic level. Even the mainstream admits this happens, as we will see below at *hyperphysics*. This alignment by itself will create structure. But structure already existed in the applied field, since any electrical

field will contain a linear alignment. That is what an electrical field *is*. Therefore, once we apply the field to the gas, both the gas and the field will have structure in that line. That line is the important one here, since it is along that line that each series falls off.

In other words, the only gas that wouldn't have this structure is a gas that has been heated from all directions. But that isn't how gases are normally heated. They are either heated from a specific direction or a specific point.

The last important thing here—and it may be the most important—is that structure is given the field simply due to its quantization. Quantization ***is*** structure. As our free electron gains and loses energy in this field, it must do so in a quantized way. Its energy gain is not continuous. It jumps from one level to another. This quantization of the electron energy is of course caused by the quantization of the photon energy. The electron gains energy by being hit by photons (or by having photons channel through it). Either way, it is spun up by photons. But since these photons hit only certain levels of energy, the electron does also. Therefore, when we apply math to this problem, we have to represent not only the overlapping fields, with an atomic field inside an electrical field, we have to represent the quantization of the photons in the field, and the way that energy drops by steps as we move out from the heated object.

You will say, "Your theory has no chance of explaining spectral lines, since if photons are already in the field in large numbers, your gas should be emitting across the spectrum, like a blackbody. Above, you make some progress in explaining emission lines, but no progress explaining the dark in between them". That's a strong argument, which is why I made it up against myself. It has to be answered. The answer is once again charge channeling. When you heat an object or gas, you increase the charge channeling. This is because you have added more photons to the area in question. These photons first spin up everything in the field, including the nuclei. They do this both from the inside and the outside. They hit the nucleus externally, transferring spin that way. They also move through the nucleus, spinning it up from the inside. The same thing applies to the free electrons, which are also spun up in the same way. As these real particles are spun up, they are spun up as spheres. They increase angular momentum around a N-S pole. This increase in angular momentum acts to open up the pole even more, allowing more charge to channel through. This increases pole-to-pole channeling, which we have studied in previous papers. As we saw in detail in my paper on Period 4, these spheres can channel pole to equator or pole to pole. Pole to equator is the standard channeling profile, but neutrons channel pole to pole—for reasons you can read about here. A strong linear ambient field will cause more pole-to-pole channeling in protons and therefore in nuclei, increasing the electrical conduction of most bodies (and in some cases the magnetism as well).

Well, as the poles open up and the charge channels become more active, the polar vortices also expand, both in length and width. This works just like the polar vortices of the Earth or Sun, which we now know to exist. In a hot gas, the atoms are moving fast enough that they can effectively mop up all available charge. *Almost every photon is channeled*. Therefore, if we monitor the light coming out of the gas, almost all the photons we receive have been channeled, either by the nuclei or by free electrons. Because they have been channeled, they have been forced to take specific paths and hit specific energies. This causes bright lines in a dark field.

Since you asked me that question, you should ask the mainstream the same question. Since they don't know about charge channeling, they have no good answer. Since in the mainstream, solids also contain atoms with bound electrons, why no spectral lines from solids? Why a continuous spectrum, even from a one-element solid? They don't know. But the answer is because in the solid, the atoms are in a

structure, with a low velocity. They wiggle but are not flying around at high velocities. Therefore, although they do channel a lot of charge, they don't channel all of it. Photons move through the gaps in the lattice, and therefore do not have to hit only the energies caused by being channeled. So although the solid is far denser, it has non-shifting holes in the structure. A hot gas, although sparser, has no completely open channels. The quickly moving nuclear vortices will capture all available charge, forcing it to hit certain energies levels.

OK, with that under our belts, we can return to the Stark split. As I said, this is a bit more complicated than the Stark shift, because now we see we have three fields we have to track. With the shift, it wasn't so important to be aware of all three, but here with the split it is. We already had two fields with the creation of the spectral lines: we had the ambient field representing the original spacing of the element, and the applied field to excite the element. With the Stark split, we now have *another* applied field, coming in from a second direction. This field also contains a spacing of electrons, as well as a stream of photons carrying them. Unless this second field is stronger than the first applied field, it must conform itself to the structure already present. It *cannot* be stronger than the first applied field, because if it were, all the emission would be pushed to the right (say), and we wouldn't see the spectrum without moving the detectors over there. So the second field conforms to the structure of the first, keeping the given gaps (allowing for the shift). However, it splits the emission lines due to its own spacing.

You may think at first glance this would be due to collisions between electrons in the two fields, but it isn't. Those collisions do happen, and they may be the cause of other lesser phenomena, but the main splits are not caused by them. The splits are simply a function of an electron in the second applied field passing through the emission of the first field. The field is now so rich in ions, if we freeze the field at a moment, we will see electrons from the second field obscuring the emission of the first field. Since these electrons are moving left to right, say, their poles will be pointing in the wrong direction to channel the main line of charge. For this reason, they can only act to block that field. The light will have to pass the body of that interloping electron, and in doing that it will be split. In fact, it can be split and re-split several times in the narrow cooling band. Depending on the width of that band, and the spacing of electrons in the two fields, any number of lines can be produced. I will hit this with more rigor below.

While you have that idea in your head, let us circle back to the Stark *shift*. I showed you a possible cause at the pole of the nucleus, but there is another possible cause of the shift at the free electron. Rather than follow the left-to-right electrons, let us return to the electrons moving right at us, in the first applied field. As I said, those electrons are aligned to their own charge field, which is also moving right at us (or our machine). Not only are they aligned, they are channeling photons. Well, you can think of each electron like a tiny nucleus, spinning with its north pole pointed at you. It will therefore also have vortices at the poles, just like the nucleus, but many times smaller. Although at normal energies, we don't get many free photons colliding, very near the bodies of the nuclei and electrons, we do get collisions. In other words, if we look near the point of any vortex, at the north or south pole of any material sphere, we *will* find photon collisions there. The densities there are high enough that photons will suffer edge hits there. These edge hits not only cause spin transfers, they cause redirections. So, even though the electron doesn't have a particle existing at its pole like the nucleus or proton might, its vortex acts as a thing that can be hit. The vortex is composed of photons. If we have a perpendicular second applied field, that field can turn the electron on its pole a small amount, just as we saw it doing when it moved the electron over on the pole of Hydrogen.

To do that, it has to apply more force at one pole than the other, of course, but that is no problem. I

have shown that all fields on the Earth are unbalanced in this way, with more photons than antiphotons. Our local field is not symmetrical. Therefore, south poles always have more action than north poles, either at the quantum level or the stellar level. We know this is true on the Earth and Sun, and it true in these larger bodies because it is true at the quantum level. Larger bodies are composed of these smaller bodies, and are determined by their qualities.

Therefore, the second locus of the Stark shift is at the pole of each free electron of the first applied field. These electrons are turned in the same way and in the same amount as the electron on the pole of Hydrogen.

I want to stress again that this explains why the spectral lines in each series widen in the way they do. Both the Stark Effect and the spectral lines themselves are being created in a cool-down area in front of the gas (or in front of the point of heating), and this area has some appreciable width. What we are seeing in the lines is a straight function of distance from the gas. One line is caused by electrons nearer the gas, and one line is caused by electrons further away. The loss in energy indicated by the position of the lines is a direct function of the increasing distance from the gas, you see.

In this way, the electron levels in the cool-down area are mimicking the electron levels in what were thought to be orbitals. Orbitals were created to explain these energy levels, but they aren't energy levels in orbitals at all.

I will be told electrons can exist at any distance from the gas, which is true, but the electrons can't exist at any *energy level*. Since the charge field itself is quantized, the energy of electron in it must be as well. As the electron moves out from the gas, it moves into cooler and cooler levels. It is indication of these levels we are seeing in the spectral lines.

You will say, "I can see that, but even so, it doesn't explain all the possible line positions. In your long paper on Goethe, you admit the photon can only hit certain energy levels, or colors, other colors being mixes. So it seems like the spectral lines could only hit a few possible levels, determined by your quantum spin equation." No, you forgot what else I said in that paper. The photon *in no field* could only hit certain energy levels or colors, the other being mixes. But I admitted the photon could be pushed to other colors by the charge field. In other words, photons are affected by the field around them, like anything else. Various charge densities can create what appears to be a continuous spectrum, even in a quantized field, because the charge densities are not quantized. The *spin levels* of the photon are quantized, but not the *charge densities*.

You will then say, "How can the density affect the spin radius, and thereby the color? Aren't you just pushing this explanation in any way you like, just as you accuse the mainstream of doing?" No, I am not, because I am taking the time to post these hard questions and answer them. Not only am I not dodging them, I am asking them of myself. The density can't affect the spin radius or spin speed, unless it bumps the whole photon up to the next level. It isn't doing that here. But the density *can* affect the color, by affecting the average angle. Remember, color is a function of wavelength, and wavelength is affected by angle. If you change the angle of incidence of an incoming wavelength, you change the wavelength. Well, say you have a set of photons coming in from some body of some size. Unless that set is made completely coherent as a matter of direction—all the photons moving parallel and right at you—the wavelength you are reading will have to be an average. Now, if you make the

charge field denser, either by making the material denser or by increasing your electrical field, you will do one of two things: either you will focus or unfocus your color. Normally, you would focus your color, because in increasing your charge field density, you would be making it more coherent. For instance, if you increased your charge field density with an applied electrical field, you would be increasing the coherence. Why? Because the electrical field is linear: it is coming in from one direction, not all directions. In fact, this is how they make light coherent. This gives each photon the same angle, and has the effect of making the spectrum less continuous. Of course you can also do the opposite: you can send charge in from all directions at once, in which case you would increase density but decrease focus. The light would spread and appear to be more continuous. And if you add charge from one side or another, you can push the average angle over and make the wavelength appear to shift that way. That is what is happening with a slit, as with Newton or Goethe. Light moving forward is pushed from the side by a perpendicular field.

In fact, this is the real explanation of line broadening. You will tell me that normally an increase in temperature causes broadening, although I just said the reverse should happen. No, I said the reverse should happen if the increase in temperature were caused by an electrical field—especially a field pointed right at your eye. But the sort of increase in temperature they are talking about is not one of that sort. Most methods of heating a material will not add charge to the material in a coherent manner. They will decrease the coherence and thereby increase the broadening. But if charge is added to a material in a coherent manner, it can decrease the broadening.

You will say that is all fine and good, but it still doesn't explain the discreet lines we see in the various series. But it does, because free electrons in the charge field act to focus the light even more. Since each electron will align its poles to the strongest applied E field, each electron acts not only to channel the light and charge, but to cohere it, tightening the average angle. As the photon moves through the aligned electron, the photon becomes aligned as well.

You will then say, “OK, but it still seems to me the electron in the cool-down area should only hit certain energy levels.” They do. “But not only certain energy levels, but *the same* energy levels for any possible gas.” Ah, I see what you are saying now. Because the levels of the photon are fixed, the levels of the electron should also be fixed. If the electron's levels are fixed, we should not see all the lines we see with all the various elements. But there is an answer to that as well. I have shown that the lines we see are caused by photons that have been channeled through these electrons. Since the electrons are at certain energy levels, so are the lines. But for a given substance, these levels are determined not only by the levels in the charge field, they are caused by the velocity of the electrons in the cool-down area. Although photons always go c, electrons can go any speed. That velocity is *not* quantized. Since the energy of the electron is both a function of its spin and its linear velocity, to calculate the levels for any gas we have to track both. The spin levels of the photons will set the quantization, but then the velocity of the electron will push that energy up or down. It is the total energy that determines where the line appears.

And this is where the charge density comes back in. Since electrons are driven by charge, a greater charge density will almost always cause a higher electron velocity. The only time that wouldn't be true if if you were sending charge into the area from all directions. But normally in any experiment, charge is added to the local field via some current or magnetic field, in which case the charge is directionalized. When a substance is heated, it often isn't heated by a directionalized field, but when an E or M field is added, it usually *is* directionalized.

You will say, “Wait, how can the velocity of the electron affect the color of a photon moving through

it? It can't speed up the photon, can it, or slow it down? So how can the electron's speed affect the energy of the line we see?" No, it can't affect c, but it can affect the wavelength. Like this: let us say the photon is coming from directly behind the electron. The electron is moving right at your eye at v = c/10, and the photon is moving c. The photon has a local wavelength determined by its radius. Since the electron is moving away from the photon, the electron will "see" the photon as red-shifted, by some amount determine by v. As the photon passes through the electron, the electron will spin it up by $1/10^{th}$ of a wavelength. So you see, we have a feedback mechanism, by which the photon affects the electron, and the electron affects the photon. The nice thing about this is that it gives us another way to calculate the velocity of the electron in a given experiment. The mainstream has always had trouble doing that, and most of the time they track energies, not velocities. But we can just work the equation backwards: we can measure the wave shift, and using the simple equation I just gave you we can back-calculate the velocity of the electron.

OK, now let us return to the Stark Split. It is known the splitting is not symmetrical, unlike with the Zeeman Effect. Different lines split more than others. This was always a big clue as well. At *hyperphysics*, we are told this is due to the E field interacting with the atom's electric dipole moment. Since the electric dipole moment is defined as **"a measure of the separation of positive and negative electrical charges in a system of electric charges, that is, a measure of the charge system's overall polarity,"** it is not clear what is interacting with what in the mainstream theory. According to the mainstream, the E field is moving electrons, so I guess they mean these moving electrons in the field are interacting with "the system of electric charges of the atom". Since *hyperphysics* say the atom must first be polarized for this to happen, it is implied this interaction is with the atom as a whole, or the nucleus. But in other ways we know they must mean the E-field is interacting with the bound electrons. It is the bound electrons that have to be "the system of electric charges", since it is the bound electrons creating the lines in first place, in mainstream theory. But this is a problem for them because polarizing the atom and polarizing the orbitals are not the same thing.

To start with, the mainstream has no mechanical way of explaining polarization, since it is not clear how or why any alignment would be caused. In my theory, you have a stream of real photons causing the polarization, but in mainstream theory you have squat. You have math causing it, by fiat. But even if that were not so, they have another problem, because you normally couldn't polarize a particle in an atomic orbit, even if you polarized the nucleus. A bound electron should be very near its nucleus, and any polarization it has should be determined by its relationship to the nucleus. That is *why* it is orbiting. It is bound by charge. So the position of the electron's pole, whatever it is, should be fixed by the local atomic field.

You will say, "No, the E field polarizes the electron directly, and we can skip the nucleus." But to do that, the E field would have to trump the nuclear field; and if it does that, then there is no way to explain why the electron remains in orbit after that trumping. The E field either trumps the atomic field or it doesn't. If it doesn't, the electron in orbit can't be polarized. If it does, then the electron will join the E field and escape.

This is why the mainstream never gives you any theory in these places. They have very little, and what they have is totally illogical.

And there are more problems. Even if we grant them that the E field can interact with polarized

electrons in orbitals without stripping them, how does that explain any split? What is being split? Are they saying the electrons actually collide, and that the collisions causes the E field electron to also emit a photon—one at the same energy as the one the orbital electron is emitting—but at two deflected angles? But if they collide, shouldn't that knock the orbital electron free? And if it is then free, the splitting should have a short lifespan. Once all the electrons are knocked out, the split should quit. That isn't what we see. If the electrons don't collide, how is anything split? What is the mechanism?

Finally, how does any of this explain asymmetrical splitting?

I have already answered most of these questions, since I am using real photons as my field particle, not the electron. The asymmetry in splitting is also easy to explain, since electrons at different free levels in the field would not be expected to split equally. Why not? Because the energy of each electron is determined both by its velocity and its spin speed. Since in my explanation, the electrons are moving mostly parallel to the photons we see, we can leave the velocity out of this part of the solution. The answer is in the spin relationships. Physically, the split is caused by photons hitting either the left edge or right edge of the electron. You will say, "Doesn't this also deplete the field, as you complained with the mainstream theory above? Wouldn't this collision knock the electrons out?" No, because here we do not have an electron-electron collision. We have a photon-electron collision. Since the photon is much much smaller, it is affected far more than the electron. Although the photon is diverted a measurable amount, the electron is diverted hardly at all from its linear course. The electron will suffer a small spin change, affecting its energy, but again, nothing compared to what the photon suffers.

At any rate, the splitting is not symmetrical, because the electrons in the field don't have the same spin energies from level to level. The electrons are losing energy as the move out from the gas or the point of heating, remember, and that energy is expressed in the spin. So an electron further from the point of heating will have a slower spin. When the photons collide with it, they will be affected less. So some lines will be split more than others.

The mainstream will try to borrow this mechanism from me, but notice they can't do it. If they tried to apply my logic to an orbit, it would fail. Why? Because the logic would work only with electrons on one half of any orbit. It would work only on the near side of the orbit, but not the far side. If we lay out our gas on a plane, say, and then polarize all the atoms relative to some applied field, one half of every orbit will be nearer our eye than the other half. In the half of each orbit that is nearer to us, the larger orbitals would be progressively further from the nucleus, and so the analogy to my explanation would partially hold. We could then explain the spectral lines get further apart. But if looked at the other half of each orbit, that would reverse. The spectral lines would flip. So they would have to tell you why the E field was interacting only with electrons on the near side of each orbit.

You will say, "I don't see why you don't have the same problem". I don't have the same problem, because in my theory the Stark Effect, as well as the spectral lines, are caused in the near part of the gas, not the far part. I don't care what is happening on the other side of the gas, because the light over there isn't coming to my eye or machines. The light I see is either coming from the point of heating, or it coming roughly from the middle of the gas toward me. Therefore, what is happening on the other side need concern only a person or machine positioned over there. It doesn't concern me.

You will say, "It doesn't matter how you 'lay out' an orbital in mainstream theory, since in mainstream theory the orbitals aren't really orbitals, they are probability clouds". But that is an obvious dodge, because no matter how you define an orbital (or fail to define it), it can't be on one side of the nucleus all the time and maintain the required charge separation or symmetry. So there is no way the

mainstream can steal this one from me, which is a pleasant change.

In concluding, I would like to point out that this disproves another longstanding assumption of the mainstream, one that was always based on nothing. They have always assumed that gases were random, simply because they couldn't see anything that could possibly give them structure. What could be structuring a gas? **The charge field**. These spectral lines from gases were always a tall sign that the gases were structured, and that therefore the charge field must be very structured as well, but that sign was ignored.

Charge is the structure of the universe, and since it exists everywhere, structure exists everywhere. Nothing is random, and it was illogical to assume anything was. There is no such thing as order out of chaos. Just as you can't get something from nothing, you can't get order from disorder. You cannot apply any ordering principle to a chaotic field. You can only get *more* order from a field that already contains it. Or, you can have more concentrated or more diffuse order, simpler or more complex order. Chaos you cannot have. What we have called chaos is only the ignorance of order.

I will be adding a couple of illustrations to this paper soon. I also expect to expand it in the coming months.