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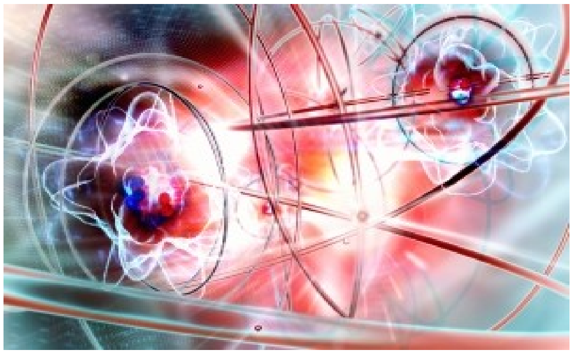
Splitting the Electron?

No, not really



by Miles Mathis

In 1982, Kugel and Khomskii proposed—strictly theoretically—that the electron might be composed of divisible parts, which they called a spinon, a holon, and an orbiton. This original proposition was put forward to explain the Jahn-Teller effect, whereby magnetic insulators are thought to cause various types of ordering in transition metal ions. Since physicists then and now have no good maps of the various nuclei—as I have—and since they don't understand how the charge field is channeled by nuclei and ions, they are forced to continue to try to give all variances or ordering to the electron. I have shown that they have been giving all "quantum numbers" to the electron from the beginning, based mostly on a hunch (and bad math by Bohr), and they are continuing to do it here. They see mysterious effects, unexplainable by current theory, so they immediately begin tacking new motions or characteristics* on to the old electron. What else could be causing it, they think.

Then, in 1996, Kim et al. claimed to confirm Kugel and Khomskii by separating an electron into a holon and a spinon. And this May [2012], Schlappa et al. claimed to find evidence of the orbiton. *Nature* magazine has been trumpeting this last discovery all summer. A reader just informed me that it was considered by some (including him) to be the most important discovery of all time. Is it? No.

Why? Well, we can answer that question by studying closely the announcement at *Nature*. Here are the crucial sentences:

The team created the quasiparticles by firing a beam of X-ray photons at a single electron in a one-dimensional sample of strontium cuprate. The beam excited the electron to a higher orbital, causing the beam to lose a fraction of its energy in the process, then rebounded. The team measured the number of scattered photons in the rebounding beam, along with their energy and momentum, and compared this with computer simulations of the beam's properties. The researchers found that when the photons' energy loss was between about 1.5 and 3.5 electronvolts, the beam's spectrum matched their predictions for the case in which an orbiton and spinon had been created and were moving in opposite directions through the material.

"A one-dimensional sample." That would be a sample in a line. Impossible. In real life, there is no such thing as a one-dimensional sample. Points, lines, and planes are all geometric abstractions, and they cannot exist. Every real thing exists in four dimensions, since the instant is also a mathematical abstraction. They must just mean a very small sample, limited as much as possible in extension. But the wording is a give-away to the sort of people we are dealing with. Physicists are no longer careful to put things in logical or physical terms, which is exactly why we get theories like this. They say whatever they like, with no slightest nod to rigor.

We see this again a sentence later, in a much more important fudge, when we are presented with the real data. The physicists measured the "scattered" photons, so that is the data. What you measure is the data. So we may infer that they saw and measured *no* spinons, orbitons, or holons. Those quasi-particles were not part of the data. They were only inferences from matching a computer simulation.

Unfortunately, that kind of procedure is neither physics nor any other kind of science. Matching a computer simulation is not data, not proof, and not even an indication of anything. Why? Because a large number of *other* computer simulations based on completely different theories might predict the same real data here. Did these physicists do anything at all to rule out other explanations of these photon numbers and energies? No. They never do. Back in the 19^{th} century, some physicists used to follow that norm, since it was considered to be part of the backbone of the scientific procedure, but for the last seven or eight decades, no one has bothered. It gets in the way of publishing.

Before I show you a couple of better explanations which these guys might build computer simulations for, let us look at their theory. Let us start with the quasi-particles. The spinon is supposed to carry the spin of the electron, the orbiton is supposed to carry the orbital position, and the holon is supposed to carry the charge. Any real physicists would read that and say, "Beg pardon?" Let us just assume for a moment that characteristics like this are separable. We may then ask, how can the orbital position move in the field? Remember, these guys are proposing that "an orbiton and spinon had been created and were moving in opposite directions through the material." If the orbiton is moving off through the field, it is not carrying the orbital position of the electron, is it? The electron cannot orbit and move "in a direction in the field opposite the spin" at the same time, can it?

We can ask a similar question about the holon. If the electron's spin is moving in direction A, and its orbital motion is moving in direction B, what is causing its holon charge at C? These physicists don't bother to give you any mechanics or physics. The names are just names, and—as with everything in QED and QCD—they don't actually apply to anything real. The spin is not real spin, the orbital position is not real orbital position, and the charge is not real charge. They are just empty names, and these guys might as well come up with whimsical quark-like names for these three quasi-particles. They are even less honest than the theorists of QCD, who at least admitted it was all completely non-physical, and gave their particles names that made that obvious. But these guys use the old words without sticking to the definitions of those words. This is quasi-physics.

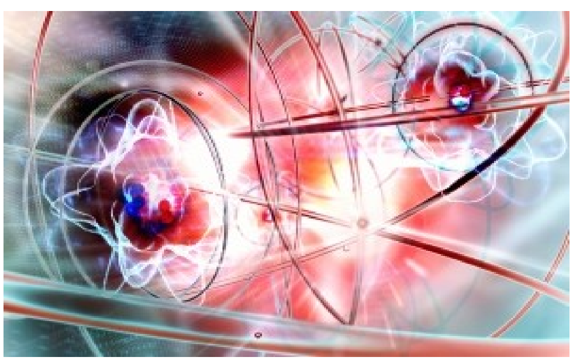
Logically and mechanically, you can't let the orbital position drift off in some vector motion through the field, because then it isn't the orbital position anymore. Likewise for the spin. If the spin moves off to the left, leaving the charge and position behind, what is spinning? Are we to believe this separated spin has no position? No charge? And, again, if the separated charge holon has no spin or position, what is defining the charge? This seems to be the least of problems for modern physicists, since they have been proposing charge with no physical characteristics for centuries. But these other questions should bother them a bit. They would bother any real physicist.

The whole idea of quasi-particles is grossly illogical from the first word. The word "particle" was always the attempt to create something solid in the void that we could stick our characteristics and variables on with some firmness. But the word "quasi" immediately destroys all that. It lets all the air out of the tire. The word "quasi-particle" is a bold oxymoron. It is like the "gassi-solid" or "squishi-courage" or the "zero-altitude airplane." Only a flabby deflated physicist who had lost all his air could even conceive of proposing such nonsense as a quasi-particle.

My readers always laugh at these new press releases, because once you know a better answer, the old answers look pretty risible. After the fact, it is clear what they were trying to get at, but the level of theorizing never rises above pathetic. This spinon theory is simply a variation of quark theory, whereby untalented theorists try desperately to give heterogeneity to something that was for a long time homogeneous. In quark theory, the data was telling them that the proton needed more characteristics. They couldn't see how to do that logically and mechanically, so they did it illogically and with no mechanics. They needed three stacked spins, but since spins in QED had gone virtual decades before (see Stern-Gerlach and Tomonaga), they couldn't do that. Instead of virtual spins, they chose virtual particles. Quarks are also quasi-particles, of course, since they don't obey the old definitions of "particle." "Quark" is just a name to which you can attach some theory and some numbers, but the theorists have never so much as attempted the first word of mechanics. It is the same with spinon theory. No mechanics has ever been attached to the names, and even the small amount of explanation we get is illogical and contradictory, as we saw above. As in QCD, the theorists just propose whatever they like and you are expected to accept it without questions.

But I have shown that a mechanical model is not difficult to build, if you are prepared to get your hands dirty and stick to the rules of physics. Both the proton and electron are built with stacked spins, and I have provided my readers with the simple quantum spin equation that unifies them both. The same equation also unifies all the baryons, mesons, uberons, bosons, fermions, leptons, and photons, including all the neutrinos. This not only explains electron heterogeneity, it explains energies in accelerators, Majorana fermions, and a host of other long-impacted mysteries. It also explains how charge is recycled through both the electron and the proton (and the neutron).

For a bit of irony, I send you to the illustration from the *Nature* article, which I have copied above under my title. Notice that the artist has chosen to diagram spinon theory with spins inside spins. Not only that, but each spin is orthogonal to and larger than the next interior spin. This artist appears to be modeling not spinon theory, but my theory.



That would suggest one solution to this present problem of the Jahn-Teller effect and similar effects. When I first saw this current article, my first thought was that the physicists were seeing near-field expressions of x, y, and z-spin on the electron. I have already linked the z-spin of particles to the magnetic field, and what we are seeing in these experiments is mainly a magnetic effect. The spinon would then be the x-spin, the orbiton would be the y-spin, and the holon would be the z-spin. Perhaps in these experiments, the local conditions would create vibrations even in lower order spins (x and y), causing traveling field waves (which we now call neutrinos). Since the three spins are in orthogonal planes, these three field waves would also be in orthogonal planes. In this way, x and z might cause "opposite" field waves, in the right magnetic field. But x and y would not move opposite, and neither would y and z. They could only be orthogonal. This would be the natural test of this theory.

That may still turn out to be the right answer, but upon further consideration, I lean to a non-electron caused effect here. As with covalent and ionic bonding and almost every other quantum effect, physicists have just assumed the culprit was the electron. I have shown it is almost never the electron. It is always the charge photon, sometimes on its own, sometimes as channeled through the nucleus. In my quantum theory, the electron is almost always just one of the effects. It is rarely the ultimate cause of any phenomena. If we look more closely at the Jahn-Teller effect, for example, we notice that it is an effect on "orbitally degenerate transition metal ions." Ions are nuclei, of course, so the most logical point of attack in solving this problem is to study the nuclei in question. Current theory doesn't do that, because it *can't* do that. The current models don't include a workable model of the nucleus, so Jahn-Teller theory starts with molecular structures, ignoring nuclear structure almost completely. Teller and Jahn used group theory to show that non-linearly spaced degenerate molecules cannot be stable. I am not questioning their math, I am pointing to the begged question. The question is, "Why and how are transition metals creating this unstable (and unequal) spacing?" The answer to that question is very likely to be the answer to the question, "What is causing the photon data of Kim et al. and Schlappa et al.?"

In other words, why are these effects produced by Copper, but not, say, Magnesium or Aluminum? Wikipedia admits,

Jahn–Teller theorem does not predict the direction of the distortion, only the presence of an unstable geometry.

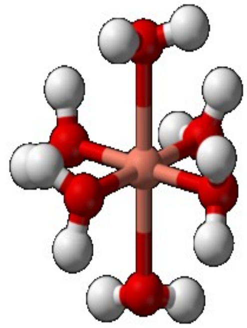
A successful nuclear model would be able to predict the direction of distortion, as well as the cause of distortion.

The distortion is currently explained by degeneracy:

The d^9 electron configuration of this ion gives three electrons in the two degenerate e_g orbitals, leading to a doubly degenerate electronic ground state. Such complexes distort along one of the molecular fourfold axes (always labeled the z axis), which has the effect of removing the orbital and electronic degeneracies and lowering the overall energy.

But as with spinons, we have never had any proof of that. It is just an *ad hoc* theory with some explanatory power but very little theoretical beauty and no simple mechanics. Degeneracy is based on a mathematical and heuristic model, not a mechanical or physical one. For instance, it doesn't tie any of this to the charge field in any mechanical way. You should ask why such a distortion is along the z-axis, and why and how this distortion "has the effect of removing...degeneracies". Current theory can't explain any of this, while I can.

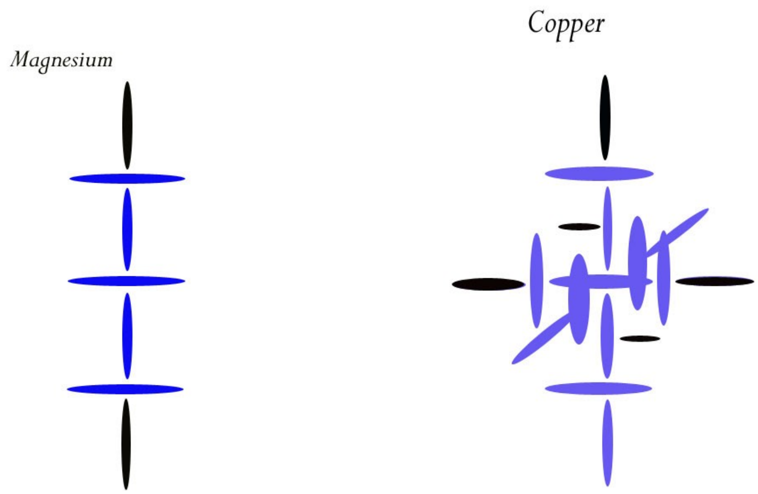
As a lead-in to my explanation, let us study the diagram at Wikipedia and its subtext.



The Jahn–Teller effect is responsible for the tetragonal distortion of the hexaaquacopper(II) complex ion, $[Cu(OH_2)6]^{2+}$, which might otherwise possess octahedral geometry. The two axial Cu−O distances are 238 pm, whereas the four equatorial Cu−O distances are ~195 pm.

As you see, current theory is based on molecular structure, not nuclear structure. But this begs the question, what is causing the differing lengths? The standard model gives the difference to electron degeneracy, but that is simply false. It has always been bad enough that this had to be explained with airy mathematical models, but it is now worse that we find the math is fake. The differing distances between Cu-O are NOT caused by electrons. Not only does this have nothing to do with degeneracy (except the broad degeneracy of physics); it has nothing to do with electrons *at all*.

To see this, we only need to look at my models of Copper and Magnesium.



Blue disks are double protons (or alphas) and black disks are single protons. In my simplest diagrams I leave the neutrons out of it, as I will do here. Magnesium has only two easy bonding spots top and bottom, and tends to be linear in the simplest bonds. But Copper can bond top or at either of the two carousel openings. In other words, Copper can accept protons at any of the three outer black positions. Since a blue disk can take two protons, those black positions have an open hole. If you have not studied my nuclear diagrams before this, you will have to read my nuclear.pdf paper to understand my simple method of construction.

Now, I ask you to compare my Copper nucleus to the $Cu(OH_2)$ diagram from Wiki. It fits right in the middle there, doesn't it? And I didn't draw this Copper model to solve this problem. If you study my models for other elements from my nuclear.pdf paper and other papers, you will see that my diagram of Copper is the result of simple construction rules I laid down there—before I ever began studying this Cu-O problem. Specifically, we fill the noble levels 1 and 2 first, then add the carousel level. Iron completes that level, and Copper is three protons into the fourth level. Notice that the nucleus in period 4 is basically ten protons tall and seven protons wide, there is more potential difference top to bottom than side to side. This will help us solve this problem in a straightforward way. Nothing in my model is determined by math or *ad hoc* theory. It is determined by logic and mechanics. It is determined by what is necessary to *physically* channel the charge field through the nucleus.

You will say, "That is charge, but what you are plugging into these positions is protons, not charge." But all charged particles follow charge. That is what "charged particle" means. Protons, like electrons, are physically pushed by the charge wind. They go where charge pushes them, *because* charge pushes them. Both their linear motions and spins come straight from charge. Spinning photons cause charged particles to spin, and moving photons cause charged particles to move. If we go back to Argon, without the top and bottom protons, we find charge whistling through the axial level of that nucleus. It also gets partially diverted by pull from the carousel level, and much charge is channeled that way, too. But the main line is axial. So when the ambient charge field passes Argon, it gets channeled first through the axial level. And if free protons are available (as in stars), as well as pressure to force a tight and permanent fit, the protons will follow the pre-existing charge channels and go to the axial level as well. That is how we build Calcium and other period 4 elements from Argon.

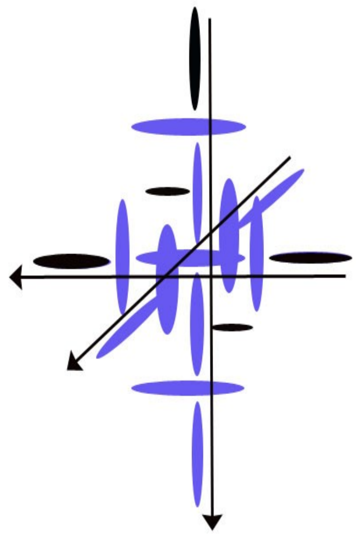
This explains the longer axial bonds of Cu-O in a natural way. It isn't that the bonds are longer, it is that the nucleus of Copper is actually taller than it is wide. You will say, "That isn't borne out by the numbers, which are not in a 10 to 7 ratio. According to you, the axial length here should be about $10/7^{th}$ of 195, which is 279, not 238." Good point, but easily answerable with straight mechanics. Because the axial level is a stronger charge channel than the carousel level—for the reasons just enumerated—the axial bond will actually be *shorter*. A stronger channel creates a tighter fit, which is a shorter bond length. We would expect this to also be in a 10 to 7 ratio, for the same reason, but this time the axial number should be 7 and the carousel number should be 10, to represent the shorter axial bond length relative to the longer overall axial length. All we need now to solve is the percentage that goes to each cause of length. Is the length of the nucleus more important or is the length of the bond more important? That is also easy to calculate, since we can take it straight from the diagram. If we let the length of the bonding proton stand for the bond length, then the bond length is just $1/10^{th}$ of the total axial length. This gives us the simple equation:

$$[(10/7)(9/10)] - [(7/10)(1/10)] \approx 1.216$$

If we multiply that by 195, we get 237. I needed to match 238, so you can see that I have confirmed the data with extremely simple mechanics and math. And I have proved that nuclear mechanics can explain bond differences, with no need for electron degeneracy.

But how does this explain the Jahn-Teller effect and the data of Kim et al. and Schlappa et al.? Again, quite simply. Once we understand how the nucleus channels charge, we see that all these teams are measuring variations in the charge field. Most of the photons in these experiments aren't free photons, in the way that the electromagnetic spectrum is now thought to be independent of the charge field. The photons are not being "scattered." They are charge photons that have been recycled through the nucleus. That is what charge is. So all we have to do is notice that this recycling will create charge variations in the three dimensions of x, y, and z. The axial level will create photon emission in the z plane here, and the carousel level will create emission in the x,y plane. Furthermore, the carousel level will create stronger jets in two specific directions at any given time, and these two jets will be orthogonal, both to each other and to the axial charge.

Copper



If we then introduce a beam of light into this directionalized charge field, it must be integrated along with the existing charge photons. But since these physicists aren't monitoring the near-infrared, they aren't measuring the charge photons themselves. What they are trying to do is monitor their own beam, as it interacts with the field. Since their own beam is X-rays, these photons are almost electrons themselves. They are very large and energetic compared to the charge photons. But the ambient charge field is still easily capable of steering them. And the closer we get to the nucleus, the denser the charge field is, and the more easily it steers either X-rays or electrons or even free protons.

So what is scattering the X-ray photons is charge field photons, and it isn't really scattering, by the old definitions. Scattering is normally understood as deflection of photons by ions or at least electrons. Some of that may be happening here, but the main interaction is photon to photon. The X-rays are encountering one of the three charge vectors in the diagram just above. This powerful stream is able to deflect the X-rays, though I suspect it takes multiple hits to do it. So rather than seeing evidence of holons, orbitons, and spinons, what we are seeing in the data is these three charge vectors.

You will say, "Well, you have admitted that these vectors are all orthogonal. They are finding opposing vectors in the latest experiments, aren't they?" As far as we know. But that can also be explained quite easily by the charge field. The charge field is actually a kind of dipole, in that we can have anti-photons being recycled as well as photons. Anti-photons are just upside down compared to photons. I have shown that about one-third of the photons on Earth are actually anti-photons, which is why the Earth has a high degree of magnetism as a whole as well as lots of local magnetism. Magnetism is simply photonic imbalance, with more photons than anti-photons, or the reverse. This being so, my diagrams above are over-simplified. I have so far diagrammed only the photons. The other three vectors could be drawn, and they will be anti-photon charge. Anti-charge, if you will. Anti-charge goes into the nucleus where the charge goes out. Since anti-photons are not mysterious in any way, they can drive X-rays and electrons and ions just like photons. They just drive them in the opposite direction, with the opposite spin. They will tend to de-spin any particles they drive, so we have other simple tests for my theory. One, when these teams find X-rays being driven in opposite directions in these experiments, they should find one set twice the total size or energy of the other, and the smaller set should be de-magnetized to some extent. Of course the second test would be easier to run on ions or electrons than X-rays, since we aren't very good at measuring the magnetism of photons. But our more advanced field tests have shown that photons *do* have a magnetic component (which is simply their outer spin—see the Faraday effect, the Zeeman effect, the Voigt effect, the Cotton-Mouton effect, the QMR effect, and the MOKE effect, for a start).

Some readers will point out that anti-charge should interfere with charge. Yes, it does. Anti-charge tamps down not only the magnetic field, but also the electrical field in this case (since we have linear vectors in very tight quarters here). In some cases, anti-photon presence doesn't affect the electrical component of the field as much (see the ionosphere of Venus), but here the anti-charge does indeed tamp down charge, since both are being recycled through the nucleus before creating the effect we are measuring. What this means is that although the magnetic and electrical effects we see on Earth are quite strong, they are not maximized. Both are at about 67% strength here. To obtain either field at full strength would require the filtering of all anti-charge from the ambient field.

Anyway, that was mostly a diversion, but I think it was an interesting one. Let me answer another question. One of my readers might point to an older paper, where I say that charge is mostly transparent to charge. Photons don't collide much in normal circumstances, and if they do it is mostly edge-to-edge hits which only cause magnetic changes. But here I have the charge field deflecting energetic X-rays. Isn't that a contradiction? No, because we are not in ordinary circumstances here. The charge field this close to the nucleus is not a normal charge density. We are aiming a beam right at molecules, specifically to obtain extraordinary results—which we do. In these experiments, the photons are not interacting with a normal charge field, or with the "ambient charge field." They are interacting with the dense and powerful jets of charge exiting the nucleus. Since these jets are focused charge, the normal rules of photon-photon interaction don't apply. In special cases like this, very focused charge is quite capable of deflecting photons, as well as increasing or decreasing their energies and spins.

That is enough to get us started on this problem. When I return to it, I will try to find free access to the actual professional papers. Hopefully the latest at least has a gloss up at ArXiv. If I can study the actual numbers and apparatus more closely, I may be able to solve this problem once and for all—if I haven't already. But I am confident that the eight pages above have already cracked the nut.

[To see the nut fully cracked, chewed, and digested, you may now visit my final two papers on this subject. In the first I closely analyze the recent paper at *Nature*. In the second, I show how to read the data correctly, by applying my nuclear diagrams to the problem.]

*Actually they don't even do that. Instead, they just add new math on top of the electron, and call that math a characteristic.