return to updates

THE TRUE CAUSE *of* DIAMAGNETISM

by Miles Mathis

First written September 7, 2019

The causes of diamagnetism and paramagnetism are not known by the mainstream to this day. You can see this by studying either one for a few hours. The mainstream leads its explanations with the usual misdirection and cloaking math. See Wikipedia for instance, which simply parrots the textbook explanations. We start with diamagnetism's "opposite", paramagnetism. Paramagnetism is said to be caused by unpaired electrons, which each act like tiny magnets due to their spin. A magnetic field causes these electrons in the substance to partially align, creating an attraction. If we ask why the alignment does not last when the field is removed, we are told it is due to thermal agitation, which constantly rearranges the alignments.

Anyone can see that this is not only insufficient, but totally false. All magnetism and electricity is supposed to be caused by these alignments, so why do some persist and some not? If thermal agitation destroys some forms of magnetism, why does it not destroy all forms of magnetism and current? Even worse, how exactly do electrons cause alignment through empty space? How is the alignment created mechanically? Isn't this force at a distance, which QED claims to have surpassed? And isn't this just solution by fiat? Larger areas become magnetic because electrons are tiny magnets? But why are electrons tiny magnets? How does spin around an axis create magnetism, and thereby attraction or repulsion? If you study the explanations closely, you soon come to realize nothing is being said. It is the usual going around in circles, explanation by naming, or explanation by math.

Besides, in other places, they tell us electrons don't really spin. The spins in quantum mechanics are virtual or intrinsic, meaning they are place-fillers in math. You aren't allowed visualize them as real spins about real axes. So how do intrinsic spins cause attractions and repulsions? The only answer we get to that is. . . messenger photons, which can *tell* larger ions to move closer or further away. Pathetic.

Another problem is that we aren't told why unpaired electrons cause diamagnetism sometimes and paramagnetism other times. Mercury and Gold are right next to eachother on the Periodic Table, with 79 and 80 electrons, but both are diamagnetic. How can Mercury, at an even number, have an unpaired electron? Wouldn't it have to have *two* unpaired electrons? But I have hit this before.

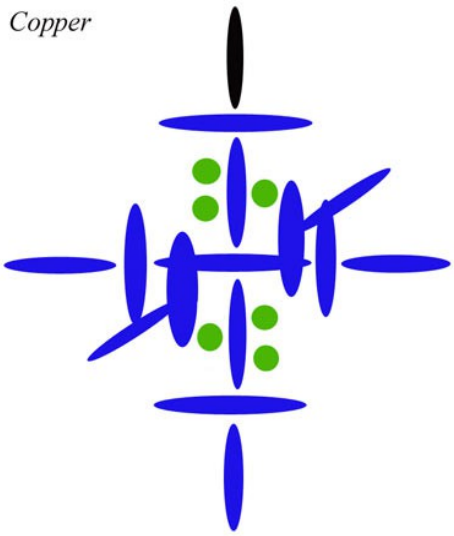
Diamagnetism is even worse, since at Wiki we don't find even the attempt at an explanation. The authors dodge immediately into math, not even bothering to assign the math to anything. We aren't sure how the math is meant to explain the phenomenon, so we can be pretty sure it doesn't. Paul Langevin's math is trotted out as fundamental, but in the next paragraph it is admitted it doesn't even work in many situations. The only sentence that addresses the question tells us that in diamagnetism, the electron alignments cause the opposite motion. Yeah, we know that, but *how and why*? No answer.

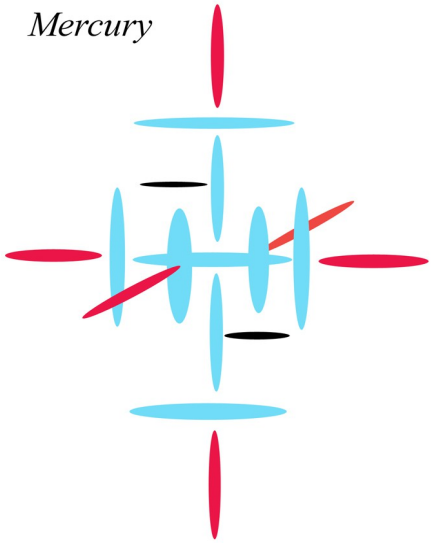
We are assured that this “classical” explanation can be rounded out with a “quantum mechanical” explanation, but of course that isn't true. We have not found it to be true with any other problem, so we may assume it isn't true here. What they mean is that big operators can be used to fudge a gigantic ugly solution, but of course those operators are never assigned to anything real. So the solution is mathematical only, and very poor even as naked mathematics. The math at this level is so squishy they could prove anything and it opposite simultaneously, and they often do.

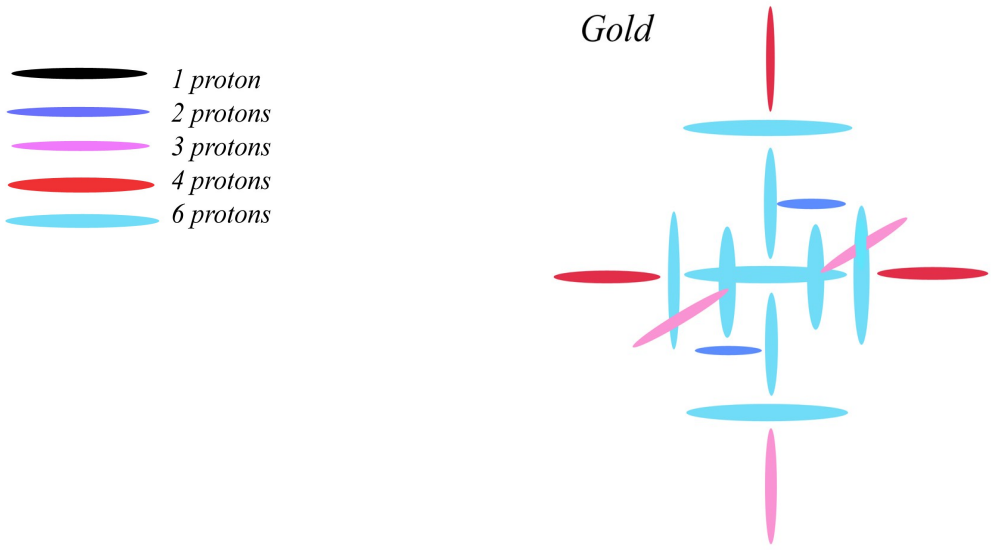
The reason this hasn't been solved is that it *couldn't* be solved without a diagram of the nucleus, and they didn't have that until I came along. Even now they prefer to ignore me, since I don't have bags of cash to hand out to them to facilitate my promotion, or new ways to drain the treasury. New physics isn't about answers, it is about money. But with my new diagrams, we can find a pretty easy answer here.

It starts with realizing that the nucleus is a charge engine, recycling and channeling real photons through it all the time. It is these streams of photons that determine everything, not electrons in orbitals. Yes, there are electrons connected to the nucleus, but they are mainly along for the ride. They don't determine any of the foundational physics. Photons do. The electrons don't reside in orbitals or clouds, they reside in defined loops at the pole of a proton in the nucleus. The important electrons pair up with protons that reside at the nuclear poles.

So, to solve the current problem, we just have to study the nuclear diagrams. To be most efficient, we will study the diagrams of Copper, Mercury, Gold, Bismuth, and Antimony, which are known to be diamagnetic. We will also study why superconductors are diamagnetic.







You can ignore the green circles in Copper, which represent neutron positions. We won't need them here. My Gold diagram is upside down to the two others, since I drew it several years earlier, before I assigned the south pole to the main charge entry. What you should notice is that Copper, Mercury and Gold all have very strong carousel levels. The carousel level is the equatorial level. I call it carousel because it spins equatorially about the nuclear axis. The main line of charge channeling through any nucleus is pole to equator, like the Earth or Galaxy. Charge comes in at both poles and is flung out equatorially via the carousel level, due to angular momentum. The nucleus is roughly spherical (though taller than it is wide), and the centrifugal effect forces charge out along the equator. All spheres have more angular momentum at the equator than poles, remember.

We have previously seen that Copper and Gold are potential conductors due to the fact that they have more protons on one pole than the other. The protons at the pole act like fans, pulling charge in. When you have more protons on one pole than the other, you get charge moving more strongly in one direction, which aids conduction. If you also have more protons on the poles than in the carousel positions, you can get through-charge or conducted charge—charge that moves from pole to pole. The nuclei can then align in that direction, creating long lines of charge, and thereby electricity. When you have the same number of protons on both poles, you get the potential for magnetism, since the two charge lines spin eachother up (by real photon collisions) as they meet along the axis.

Photons go in the south pole and antiphotons go in the north pole. They are spinning opposite. But when opposite spins meet from opposite directions, they are no longer opposite. They are the same. So, rather than spinning one another down, they spin up. The spins add rather than subtract.*

Mercury isn't as magnetic as it might be for two reasons: one, it has problems bonding to itself, which also makes it a liquid. That problem also interferes with the alignment, since the polar bonds are always weak. Two, its diagram is red all round in the fourth level, meaning the pole-to-equator stream will always be competing with the pole-to-pole stream. Unless the carousel level can be slowed or stopped, it will be stronger than the axial level. Eight protons are at the poles, while 16 are on the equator.

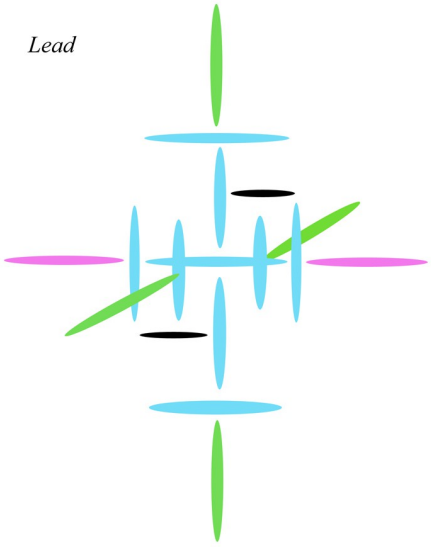
The strong carousel levels make these elements strongly insulating in the right circumstances. Pole to

equator channeling is the fundamental cause of insulation, you see, since it causes the charge streams to move in step or taxicab patterns. The charge motion is not linear, therefore it is delayed and weakened, as a matter of current. This insulating effect is the main cause of diamagnetism, since the main charge stream of the nucleus is moving 90 degrees to any applied stream that might cause electricity or magnetism.

Bismuth is only four up from Gold, so it acts in a similar way. Two of the new protons go to the carousel level, strengthening it even more. Antimony, at number 51, is a Krypton base (9 inner disks all red), with 15 protons in the outer level. That is blue disks in all outer positions except the north pole. So we again have a stronger carousel level.

For more, we can look at why Thallium and Lead aren't as diamagnetic as the elements around them. Thallium is at number 81, so we lose the near-perfect symmetry of Mercury. We can't put this new proton on the carousel, since it would lopside the nucleus. So it must go on the pole. This makes the carousel level of Thallium relatively weaker than Mercury. [Thallium is three top, four bottom, and two each in the inner holes. But the inner holes are plugged into the axis, so they count as polar, not carousel. In those positions, they are not releasing charge out equatorially, as we have seen before. Rather, they are plugging those inner holes.]

Lead



Lead is similar to Thallium, adding another proton to the pole, thereby weakening the carousel level. [That is my previous diagram of Lead, which still seems like a good guess. Green is five protons. But I now think it is possible lead bonds to itself via the inner level. Five bonds well with one in a hole that can take six, you see. It is a work in progress.]

But this doesn't explain why superconductors are diamagnetic. I have proposed that in superconduction, the carousel level has been stopped, forcing all charge to move pole-to-pole. According to my analysis above, shouldn't that create a perfect paramagnet, not diamagnet? No, since current and magnetism aren't the same thing. Superconduction creates perfect conduction, but not perfect magnetism. Why? Because conduction is charge moving *one* way, from south pole to north, say. But the creation of magnetism requires charge moving *both* directions, as I have shown previously. In superconductors, magnetism at the nuclear level is short-circuited, because the anticharge has been

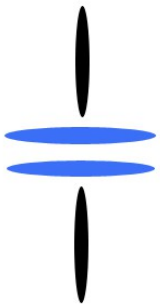
jettisoned. Since the carousel level has been taken toward zero, the magnetic field is nullified. See the Meissner Effect. A magnetic field can't work in normal ways on a superconductor, since it has nothing to align to. Therefore, the conducted charge of the superconductor hits the magnetic field like a wall, causing repulsion. The charge can't be channeled, so it can only bounce off anything it hits.

Well, you will say, if that is true, then Bismuth, with a strong carousel level, should act the opposite of a superconductor, with none. No, because a superconductor is strongly conducting, while Bismuth in its normal state is not. This gives us a sort of double-negative (opposite twice) in the math, explaining why Bismuth and a superconductor act much the same here. The channels in a superconductor are moving pole to pole, while the channels in Bismuth are moving pole to equator. So Bismuth won't even try to point its south pole at the magnetic field. Rather, it will align its equator to the magnetic field, trying to match it. But once it does that, we have repulsion, since in magnetism like fields repulse. The photons in the charge fields are in parallel planes or lines, spinning the same way, so that when they collide, they can only spin one another up. This increases the energy in that immediate area, similar to a rise in charge density (though it is a rise in spin). Greater energy in any area implies a greater tendency to dissipate that energy, since by the rules of entropy any energy will try to move into a less dense area. In this case, dissipation looks the same as repulsion, and any quanta in the area will move apart if they can.

You will say that by this explanation, charge in a Copper wire should cause the wire to dissipate by the same mechanism. Charge streams are aligned and parallel, and there is an energy rise, therefore the wire should dissolve. Except that of course Copper wire is not the same as a bit of Bismuth next to a magnetic field. Copper is previously bound to itself in a solid structure, caused by other bonds, while Bismuth is not previously bound to the magnetic field. Bismuth is free to move away from the field, while Copper is not free to move away from itself. However, there is a tendency in Copper wire to expand when conducting, and it is caused by precisely this mechanism.

My explanation tells us why all elements show some degree of diamagnetism, even when exhibiting stronger degrees of paramagnetism. All elements have a sort of carousel level, even the smaller ones. To see this, let us look again at Carbon, which we were studying yesterday.

Carbon



Although Carbon doesn't have a carousel level, it has a sort of sub-carousel level. Those two blue disks at the equator are spinning and flinging out charge equatorially, so they act the same as a carousel level, just weaker. Any equatorial charge stream will be diamagnetic, since the magnetic charge stream of this nucleus or any other nucleus is polar. That is why magnetism moves with electricity. Both are qualities of the conducted charge stream. The linear motion of the charge is the E field, the spin of the (photons in the) charge stream is the B field. But both fields are created and move along the nuclear

pole. As we are seeing, the equatorial charge stream of the nucleus could also be called magnetic, but it is not what causes the magnetic fields we are familiar with. Those magnetic fields are cohorts of the electrical field, which is the conducted field, which moves pole to pole.

So you see how the diamagnetic stream is at 90 degrees to the paramagnetic stream. They have some similarities, since they are both caused by spin, but the spin of each is at a different level. The spin that creates the diamagnetic stream is at the level of the nucleus, since it is caused by the spin of the nucleus as a whole. The spin of the paramagnetic stream is at the level of the photon, since it is caused by the spin of each photon. So the two are not opposite as we are told. They cause the opposite *effect* in some situations, but mechanically they are not strictly opposite. They are not even opposite in direction, as you now see. They are at 90 degrees. They only cause opposite motion in greater fields.

To understand this better, let us return to paramagnetism, which causes an attraction. Paramagnetism is a weaker form of ferromagnetism, so it must take place along the pole. Again, all elements are paramagnetic to a degree, even the ones that are more diamagnetic. And we now understand why. Copper and other nuclei that have more protons on one pole than the other are still paramagnetic to a degree, and that is because we have opposing charge streams. Copper is stronger in one direction than the other (about twice as strong), but the anticharge stream is still there in normal circumstances. This is why Copper shows a minor degree of magnetism, and can show more when forced to do so. If we create anticharge and force it into Copper's weaker north pole, we can make Copper more magnetic and less conductive.

The reason we see a lot of elements that are paramagnetic is because a lot of elements have weak carousel levels. The elements on the left side of the Periodic Table all have weak carousel levels, so they are more or less paramagnetic. The reason they are not more strongly magnetic is that they do not have many protons on the poles, either. To get stronger magnetism, you need more protons on the poles and fewer on the equator. You also need an equal number on each pole. To make the best magnet, you plug as many protons on the pole as you can, as with restructured Neodymium.

On the way out I will answer the first question we asked above: why does diamagnetism die when the field is removed? Because the field is a real field of photons, not an alignment of domains or something like that. It is not caused by electrons spinning, or by unpaired electrons. It is caused by real streams of photons moving between objects. So if you remove the applied field, the ambient field moves back in. That is to say, the field of the Earth+the field of objects on the Earth. If you remove an applied field in an experiment, the object in question does not then exist in a charge vacuum, does it? No, it exists in whatever field was there before you hit the switch. I will be told they create vacuums for these experiments, but that doesn't answer since you cannot create a charge vacuum. They only create ion and molecule vacuums. So once you turn off the machines, the local field moves back in and the objects re-align to that. The Earth's E field is mostly up, but science labs are normally littered with other fields, so you end up getting “thermal agitation”.

And ferromagnetism, why doesn't that die? Because the body in question now has charge streams that are stronger than the Earth's stream at that point. The nuclei have created molecular structures and channels so strong they cannot be turned by the Earth's field or by other ambient fields. They are locked into linear charge streams by close and tight linkages (plugs), and they also recycle their greater streams in some way (by creating closed loops). Which is pretty much to say the charge densities in the material outweigh the charge densities in the ambient field, and trump it. They persist until a stronger field is applied to break them.

The ONLY thing that can affect a charge field is a denser or more aligned charge field. Every element has such a charge field, which is why it persists. Every nucleus is the locus of a very dense charge field, compressed there by a star or galactic core, and fed each moment by the ambient field.

Since we have seen that diamagnetism is not really either antimagnetism or non-magnetism, we should ask what happens when we have a non-magnetic substance. How can a substance be non-magnetic? Well, it can't. All elements channel charge, so all elements are electric and magnetic in some way. We have seen that some channel pole to pole, aiding conduction, and others channel mainly pole to equator, aiding insulation, but all of them channel charge. They feed off of it, like little engines, so if they stopped recycling they would dissolve. So there is no such thing as a non-magnetic substance, technically. The reason some substances don't move in a magnetic field is that they have balanced their paramagnetic and diamagnetic responses. In the given circumstances, they are channeling equally in the two ways, pole to pole and pole to equator, offsetting the apparent attractions and repulsions. In other words, their energy gains from spin-ups equal their energy losses from spin-downs, giving a result near zero. Given the local field tension, they don't have enough energy to trump it, and remain still.

return to updates

*I was interested to discover recently that Rankine proposed real spin of molecules as the cause of the wave motion of light almost 200 years ago, which Maxwell alludes to on p. 236 of his *Theory of Heat*. So real spin was once a viable solution to physical problems, and apparently was only buried after Maxwell so conspicuously failed with his theory of vortices. It was buried even deeper by Bohr and his minions. No one realized that all such effects were caused not by the spin of ions or molecules, but by the spin of photons, and that these spins had to be tracked through nuclear channels. Maxwell was also hampered by the belief that light was a field wave, rather than a spin wave of each photon. No one saw that critical difference before me, or if they did they have since been buried.