Muon Magnetism

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Yesterday *Nature* published a press release on the latest muon magnetism experiments, saying they were "spellbound by the deepening mystery" of it. It is a deepening mystery because it has been going on for about 12 years, and my readers have seen me commenting on the farce from the beginning. I solved it for them outright in 2014, visiting it again in 2016 and 2021, but as I pointed out then, they can't let it go. As with the Solar Cycles, the nuclear architecture, molecular theory, superposition, and a hundred other things, they can't just admit I was right and move on. They are now in a permanent crisis mode, expending huge amounts of energy misdirecting their readers and trying to fool themselves into thinking they can still win this somehow. Surely, with enough data pushing and equation finessing they can save the Standard Model and keep me outside the gates for a few more years, at least until the end of the current funding cycle?

Yes, it has turned into yet another Modern debacle, a spectacular intellectual and spiritual meltdown caused by decades of hubris. We would be very surprised if physics *weren't* hitting a wall right now, since everything else is. All facets of civilization are taking a beating as the top families crash and burn in horrific fashion, taking the rest of the world down with them.

But let's leave that and look at the paper itself. Author Davide Castelvecchi leads with this claim:

Theoretical predictions move closer to experimental results, but questions remain about possible gaps in the standard model of particle physics.

In other words, he starts off by dunking you in a lie. Rather than start with the truth and spin you off later, he decides to hit you with a big fat lie in the first sentence. It all centers on that word "predictions". He hopes you have forgotten what it means. But if you think for a moment you remember that you can't move predictions closer to results. You can push calculations closer to results, but once you have pushed them they aren't *predictions* anymore. You see how that works? So we find ourselves in the presence of the usual shameless spinning, telling all we need to know about Davide Castelvecchi.

He continues the lies and spinning in the third sentence:

Last year, an experiment suggested that the elementary particle had inexplicably strong magnetism, possibly breaking a decades-long streak of victories for the leading theory of particle physics, known as the standard model.

You have to be kidding me! A decades-long streak of victories? What person who has been awake for the past 20 years could believe that? The standard model has been imploding with ever more noise during that time, as every experiment at every level and in every subfield has been returning data negative to the standard model. Physicists can't explain anything and admit it, from **dark matter** to the **vacuum catastrophe** to the **atmosphere of Uranus** to the **Earth's core** to the Solar Cycles to **magnetic reconnection** to the **fine structure constant** to the **Galactic Rotation Problem** to the **Bode series** to the **magnetism of Mars** to the **aurorae** to **unification** to the **strong force** to **C-orbit asteroids** to **NMR** to **meson construction** to **photon up-conversion** to the **cosmic mass deficit**.

I will be told the Standard Model only has to do with particle physics, and many of those things in my list are unrelated. No they aren't. Everything in physics is related, and the reason they can't solve Solar System or Galactic problems is that they don't understand charge—which is a problem of particle physics. The Standard Model is dead on all fronts because it doesn't understand what charge is and doesn't include it properly. I have proved that beyond any doubt, so I assume anyone in the field with any intelligence can see that.

I am about to prove it again, with huge exclamation points.

Next, Castelvecchi says this:

The new predictions are preliminary, and do not completely vindicate the standard model. But by narrowing the gap between theory and experiment, they might make it easier to resolve the discrepancy — while potentially creating another one.

Again, the slippery use of the word "prediction", to try to make you think the Standard Model saw any of this coming. But I remind you that there are no such things as new or preliminary predictions. A theory or model doesn't get to create an endless line of new predictions, pushed every time new data comes in. A model that can be hammered toward any and all data after the fact is an **unfalsifiable** model. Which is to say a useless model. It doesn't need to make any predictions, since the predictions can be faked after the fact, as we are seeing.

I expected this here, because we have seen the same thing in the Solar Cycle theater, where the mainstream continues to tune its "predictions" right up to the moment new data is coming in, using recent data to do that. We have even seen them retune their "predictions" *after* the data has come in, which is what we are seeing here with the muon. Just look at what Castelvecchi says in the next section:

In 2020, the theoretical-physics community produced a consensus paper with the most accurate prediction yet for the muon's magnetic moment[1]. This largely relied on calculations based on the fundamental principles of the standard model, but the researchers needed to plug in some experimental data to reflect the magnetic influence of particles such as quarks and gluons, which could not be calculated adequately using theory alone.

A consensus paper, since these people are now never seen in groups less than a thousand. It is too dangerous. And a consensus paper means they can't be wrong, you know. Large groups are always right, and cannot be beaten by one guy. Also note the "most accurate prediction yet". You have to laugh. They allow themselves an endless line of "predictions", until they finally beat the equation in line with data. To fill the large gap between the real Standard Model prediction and data, they needed to manufacture extra magnetism from quarks and gluons. One problem: according to the Standard Model, quarks and gluons should be sub-magnetic or non-magnetic. Gluons are strong force particles, not EM particles; and quarks—as baryon constituents—should not be magnetic on their own, either. A greater problem: there is zero evidence either quarks or gluons exist, or that they are created by muons in this way. It is just a theory someone came up with to fill a gap. As you see, it is a pathetically bad theory.

For more proof of the fudge, we find this:

This calculation was soon joined by the most accurate experimental measurement of the muon's magnetic moment. In April 2021, the Muon g - 2 experiment at the Fermi National Accelerator Laboratory (Fermilab), outside Chicago, Illinois, reported that the muon's magnetic moment was significantly higher than the theoretical prediction[2].

Yet on the very same day, physicists in a collaboration called BMW unveiled separate calculations of the magnetic moment that did not require the assistance of experimental data. They used a technique called lattice quantum chromodynamics (lattice QCD) to simulate the behaviour of quarks, gluons and other particles. This pegged the muon's magnetic moment higher than the calculation in the 2020 consensus paper, and closer to the Muon g - 2 experimental value[3].

On the very same day! Well what do you know! But that's not suspicious timing, is it? The same day this Standard-Model-ending data comes out, BMW just happens to publish new “predictions” that match it. And that was based on? **Computer simulations** of pretend particles that have never been seen in a real experiment, manufacturing new magnetism out of thin air. Clearly, nothing embarrasses these people. At least eight teams of “physicists” are racing to build “consensus” on this topic, burning ever more computer time on it.

But the answer here isn't that they had previously forgotten to include these quarks and gluons. The answer is the answer I gave them in 2014: they forgot to include the real charge field, made of real photons. They also can't possibly predict anything about muons because they don't know how they are composed. Following the Standard Model, they think muons are made of quarks, but they aren't. There are no quarks. As you can seen in my meson paper, **muons are made of stacked spins**, just like everything else. To calculate a magnetic moment, you have to know the muon is releasing charge to the side, and you have to know how that will affect the field measured by a given device. I don't know how they are measuring the magnetism of the muon, or how they predicted a value from the Standard Model. But if they want to show me the calculations, I can show them where they went wrong in about five minutes. They should be able to figure it out just from reading my previous papers, and my guess is they have already done that. But of course they can't admit that without giving me another win, so they have to pretend this has something to do with quarks. As long as they keep doing that, they can keep pretending the Standard Model is continuing its decades-long triumph.

Castelvecchi ends by admitting:

And if lattice QCD and experiments do end up converging on the same value, physicists would still need to explain why the 2020 consensus paper was so off the mark, says Sven Heinemeyer, a theoretical physicist at CERN, the European particle physics laboratory outside Geneva, Switzerland.

Could it be because the 2020 consensus paper was before the muon g-2 experiment at Fermi in 2021? So they didn't really know how far they needed to fudge in 2020. Plus, if you consult my 2021 paper on this, you will see their answer at that time had nothing to do with quarks or gluons, it had to do with vacuum potential contributions, aka LO-HVP. But Castelvecchi forgets to mention anything about LO-HVP here in this 2022 paper, just a year later. He also forgets to mention the gap they are trying to fill is 14%, which is huge by quantum standards. They seemed to realize they couldn't fill a 14% gap by borrowing from the vacuum, especially after my paper called them out on it, so they switched overnight to this quark/gluon fudge. But of course they have the same problem there, since trying to fill a 14% gap with a quark/gluon stew is just as ridiculous as borrowing from the vacuum. We are told these quarks and gluons just pop into and out of existence, which is convenient, but even the standard model admits the larger quarks couldn't exist solo for more than about 10^{-30}s, otherwise we would have spotted them by now (we haven't). Since muons live for 10^{-6}s, the quarks live a trillion trillion times shorter lives, which makes it sort of hard for them to provide a 14% correction here.

Being reminded the gap here is 14%, let me see if I can show where that comes from, on a post-it note. I hadn't thought I could do it coming in, but now that I get here I think I can.

I couldn't find the mainstream calculations for the muon's magnetic moment, only the fact it was thought to be 2. So the experiment must be yielding something like 2.28. I guess they scaled up from the electron's value of 1 somehow, using the Bohr magneton and the *g*-factor, but all that is such a mess I prefer to stay well clear of it. I have already unwound some of it **in my paper on the Bohr magneton**. But it seems curious they would arrive at such a round number as 2. It doesn't make any sense to me, and looks fudged at a glance. I would say it makes more sense to calculate down from the proton, which has a value of 2.793. The proton has a mass of 938.3. So if magnetism followed mass, the number for the muon would be .315. Which means we are off by a factor of 7.24.

Wow. So that's all it took. I have already solved it. Those familiar with my papers will recognize that number from my quantum spin equations. My best readers are already hopping up and down.

The four levels of spin, **as found in my paper unifying the electron and proton**, are 9, 65, 1025, and 16385. If we divide 16385 by 9, we get 1820.56, which is the known difference in size between the electron and baryon. It is called the Dalton by the mainstream. But if we divide 65 by 9, we get 7.222, which is the difference between the spinning and non-spinning electron. Or the electron at rest and the electron in motion. Or what I call the level-1 electron and the level-2 electron.* We have seen that number 7.222 and used it in many subsequent papers, which is why it hit me like a truck here. The electron at rest is not spinning*, while the electron in motion is spun up by the charge field it is moving through. It is spun up by direct real edge hits by real photons.

What does this tell us? It tells us that the math is this simple, as I promised: to find the magnetic moment of the muon, you divide its known mass by that of the proton:

105.66/938.27 = .1126
Multiply that by the magnetic moment of the proton
2.793 x .1126 = .3145
Multiply that by 65/9
= 2.271

That would have been my prediction for the magnetic moment of the muon, if anyone had asked me.

But again, what does it mean? How can I apply a number for the electron to the muon? What just happened? What it means is that the mainstream has never been clear on the difference between a particle at rest and one in motion. When we get mainstream numbers for rest mass, we have to tweak them to match experiments where the particles are *not* at rest. The numbers 105.7 and 938 are *rest* masses, and they admit that. The mainstream doesn't understand how to enter those numbers into experiments with quickly moving particles, so they just ignore it. If they do anything they muck everything up with Relativity transforms, ignoring both the ambient charge field and the channeled charge field. They have to, because they don't know how the charge field works: what it is or how it is channeled. But what my simple math here tells us is that the muon can't create magnetism at rest. It can only do it at speed, after it has been spun up by the ambient charge field. We see that it gains energy at the same relative rate as the electron. The electron in motion increases its total energy by

7.222 times, and—as far as magnetism is concerned—so does the muon.

I remind you those four numbers of my spin levels were arrived at by equally simple math. All I did is stack three spins on an axial spin, using gyroscopic rules of doubling. This is how quantum particles at speed respond to the ambient charge field. They recycle it, and in so doing they create the EM field. Or, you could say the EM field pre-exists as the charge field, but matter channels and focuses the charge field, giving it direction and thereby increased and measurable strength.

Next day: I find the following day that some are still failing to follow me here, even after taking those links to old papers. So I will give you a variant explanation. Magnetism can't simply be a function of mass, and even the mainstream doesn't think it is. Which is why they never tried to do what I am doing. They thought it couldn't be done. Magnetism is a function of both mass and charge density, and when we are making corrections to the mass differentials here, what we are really doing as a matter of local mechanics is include charge density. Why isn't charge density a function of mass or total energy? Because it is a measurement of **charge emission**, which as I have shown is also a function of size. A larger particle like the proton will emit from a larger surface, so if everything else stays the same, the charge density will be less emitted from a larger surface. The muon has more charge density because it is smaller, and for no other reason. This is why the muon has more magnetism than its mass would indicate.

But again, why 7.222 times? This means the muon is that much denser than the proton, but that isn't what 7.222 meant in my quantum spin equations, is it? It meant the electron in motion had that much more *energy* than the electron at rest. Yes, but remember, according to my spin-stacking theory, the muon is just an electron with an extra spin, and the proton is just a muon with an extra spin. So it is not really surprising the energy scaler between level-1 and level-2 would be the same as the density scaler between level-3 and level-4.

To really unwind it, let's look again at what we found. The mass differential between muon and proton is .113, and if the magnetism differential were the same, we would find a muon magnetism of .3145. But we found we needed to multiply by another scaler in the amount of 7.222 to get the right magnetism. That can only be some sort of density scaler. In my quantum spin equations, it is a size scaler, which already takes us halfway to explaining it showing up here. Density is mass per volume, which is size. So, so far so good. In both places it is describing size. The muon is in some way 7.222 times smaller than the proton, and the moving electron is 7.222 times larger than the electron at rest, as a matter of spin radius. But I already have quantum spin numbers for the proton and muon of 16385 and 2050, so the ratio should be 8, not 7.222. We know the mass scales to the number 8, since it gives us the number 16385, which matches the Dalton. So we know the mass is a function of the spin size and energy. Given that, we should scale down to the muon using the number 8, using that radius differential to give us a density differential. But as we just saw, it doesn't work that way. We find the charge differential between proton and muon is 7.222, not 8. Why?

It actually took me a day to figure it out, which is why I came back for this add-on. As usual, it is very simple once you see the right answer. These quantum spin levels are determined by simple doublings, caused by gyroscopic rules. The sequence is straightforward and intuitive. Now, if we take that spin sequence 9, 65, 1025, 16385, and start running charge up through it, we find that because that first spin-up from level-1 to level-2 is a ratio of 7.222, no later spin up to level-3 or level-4 can exceed it. The first inner channel has a given level, and so later spin ups cannot be more energetic than the initial one. The jump from 9 to 65 determines the maximum charge channel of the first level, and so all subsequent jumps to larger spins must match it. They can hit 7.222 but cannot hit 8. So while the outer spin architecture is built on 8, the charge density cannot fully fill it. Though the volume and surface area exists in upper levels to channel at 8, the charge actually moving through the lower level peaks at 7.222. Since the charge comes in through the poles of the particle, it moves first through the lower levels and only then through the outer levels and to the particle equator.

Think of how charge moves through the Earth, since it happens via the same architecture. Charge comes into the Earth via the poles, moving down toward the core. It then turns due to centrifugal forces from spin and heads back to the surface, being emitted most heavily near the equator. Quantum particles are spinning much faster, so all their charge is emitted at the equator, giving them a charge profile like a disk. So charge moves out through inner levels first. The strength of the channels are determined by the channeling capability of the inner levels. Therefore, the muon or proton cannot channel more charge in the outer levels than in the inner levels.

I have shown you how to scale down from the proton to the muon. Can I show you how to scale up to the muon from the level-2 electron? Yes, though we will see it is a lot more difficult, explaining why the mainstream couldn't do it. They would have to know about the level-2 electron for a start, and they don't. We start by following the same procedure. The level-2 electron has mass/energy of .511 x 7.222 = 3.69MeV. So if magnetism followed mass, the muon would have a value of 28.65. A factor of 12.61 too high. While the muon is more dense than the proton, it is less dense than the electron. But why 12.61? Well, if we return to the quantum spin sequence, we divide 2050 by 65 to find the density difference between the muon level and the moving electron level. Which gives us 31.54. If we divide that by 12.61, we find exactly 2.5, which is suggestive. It reminds us that in the meson paper, I showed you the mainstream muon is actually two particles huddling. It is not one particle at level 2050, it is two particles, each at level 1025. Which explains the number 2 here. But we still have a miss of .5. That is caused by each particle blocking 1/4 of the charge of its mate, lowering the charge density differential again. Roughly, the particles are emitting 360 degrees, or NSEW, say. But its adjacent mate is blocking 90 degrees.

You will say the mainstream has never figured out the muon is two particles, but it is easy to see why. **I have previously shown why the muon must emit to the side** (relative to its linear motion), which is the mechanical cause of its short life. Long-lived particles emit forward, giving them protection in collision. These collisions cause deflections. But with level-3 particles, we have weakness precisely because of that odd level. The NSEW emission equator of the muon isn't aligned to its linear motion, being orthogonal to it. So it is no protection at the front in collision, dooming the particle. But this same configuration explains the twin character of the muon, since the duo can bond side-to-side via the same charge channel. How can they do that and block charge at the same time? It is because they don't really block one another's charge, they swallow it. ¼ of the charge is in a constant internal loop, binding the particles together in a nearly unbreakable clinch.

And how does that happen, exactly? Well, as usual it is completely visualizable. Put two spheres edge-to-edge, touching at a point. Have them move in the x direction. If z is up, place their equators in y. Their poles will then be in x. Charge will then be moving in in x and out in y. So the muon is a great charge channeler, but it has no charge protection in front. If we put its equator in x or z, it would be emitting forward and would have protection, but in this case it doesn't. Now, if both particles were spinning the same direction, they would both be positive and would drive one another off strongly. But if they are spinning opposite, they attract. Why? You will say that if they are both emitting photons, then the emission fields should hit like opposing winds, driving one other off no matter what direction the larger particle is spinning. But you are forgetting one thing: the photons are also spinning. So both particles aren't emitting photons, strictly. One is emitting photons and the other is emitting antiphotons. In most cases at our level, photons fields are interpenetrable. But at the quantum level, especially at the surface of quanta, you get lots of photon hits. Even then they almost always hit edge to edge, since they are so small. So what you get with opposite spinning photons is spin-ups or spin downs. Spin-ups create more energy in that area, driving everything apart. Spin-downs lower energy in the area, creating low pressure spots that act like strong glue. There is no real attraction, the attraction is caused by greater pressure on the other side *pushing* them together, but you see how it works.

This is why muons are almost never split, though they are dual. It would take a high-energy hit right on that point of connection, which is vanishingly small. And since muons don't live very long, your time window is very small, too.

This would mean that positrons and electrons could also take these configurations, rather than annihilating. That's right, and I showed in my meson paper that the tau neutrino is exactly such a beast. It is not a neutrino at all, it is two electrons and two positrons huddling, in a similar fashion to our muon.

Added July 5, 2022: OK, now let's see if we can also calculate directly from the electron to the proton, using the same method. This will be even more difficult, since we are calculating up two levels. We already know the mass ratio is 1836, so if magnetism followed mass, that would the number for the proton. But is the electron with a magnetism of 1 the level-1 electron or the level-2 electron? Must be the level-2 electron, since electrons at rest can't show magnetism. Which changes our numbers. Instead of dividing 938.3 by .511, we divide by 3.69MeV, lowering our number to 254.2. Which means we are off by a factor of 91, which we know is a density difference. We would expect that is some multiple of 7.222, but this time we are two levels away. So again, we have to follow charge up through the spins, from level 2 to level 4. I will show you the full mechanics, but it is easiest to work backwards:

We will find that

91 = 12.8 x 7.1

with the first number coming from the jump to level 3 and the second number coming from the jump to level 4. Although the muon was at 2050, level 3 is half that, 1025, so we divide 1025 by 65 to find our first jump here: 15.77. Remember, my quantum spin equation gave us the fundamental series 9, 65, 1025, 16385. So the first level is trying to hit 8, but due to the way the particle is built, it can only hit 7.22. The second level, being double that, is trying to hit 16, but can only hit 15.77 due to the limit underneath it. The third jump nearly clears the limit, very nearly hitting 16, as you see from 16385/1025 = 15.985. So in our problem, as the charge density of 7.22 moves to the next level, it spreads out into 15.77, lowering its effect and bringing our magnetism number down with it. And what number will it hit in the next level? Here is the simple math:

$(7.2222/8)^2 \times 15.77 = 12.852$

That is the shortest way to calculate it, and you see it tells us what fraction of the second level the incoming charge density from the lower level can fill. Those numbers tell us the charge was already only a fraction of what would be allowed at upper levels, since everything is a factor of eight here, and we square that because in moving from the lower level to the upper, the charge is moving from one dimension, to two dimensions, to three. Or, it is initially moving in x, then in x and y, then finally in x, y, and z.

We then repeat that logic with the step to the next level. We watch that number 12.85 move up into the third spin level, and calculate how it must dissipate further in charge density:

$(12.852/15.7692)^4 \times 16 = 7.0593$

Some will say, that seems like a very complicated way to do it. Why not just find

$91 = 7.222 \times 12.6$

using numbers from the previous sections? Can't do that, because the muon isn't at level 3, as I showed you. It is double level three, being at 2050 instead of 1025. Plus, the proton can't very well have two muons embedded in it, can it? Or, to say it another way, I don't see any way to split the third spin level in the interior of the proton. It doesn't fit the spin-stacking model. Plus, going from electron to proton can't be as simple as going from electron to muon or muon to proton, since—as we saw—we have to integrate two steps. Which requires going inside the spins to see what is actually going on. Although my numbers didn't completely resolve, I am pretty sure I am on the right track. Probably the particle expends some charge energy creating this magnetism we are measuring, and it may not all be released from the 4th level at the end. A small fraction may leak in the transition from level to level, for instance. Or I may have to come back and tweak this later. It is a work in progress.

*The full answer is only slightly more complex, but I will footnote it here for the sake of rigor. The level-1 electron is spinning only on its axis, while the level-2 electron has two spins. It is also spinning end-over-end, creating a wave in the linear direction. See **my important paper on superposition** for more on this. This gives the moving electron a larger spin radius as well as a greater charge. The greater size allows the level-2 electron to sweep up more charge, recycling it. So when they talk about the magnetic moment or charge of the electron, they are talking about this moving electron, not the one at rest. Electrons in real experiments are never at rest. They are either "free" electrons, riding along with the ambient charge field, or they are orbiting the pole of some proton, trying to follow the charge in.