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The MAGNETIC FIELDS
of Uranus and Neptune

by Miles Mathis

I have recently used my photon spin model of magnetism to show why Mars has a low magnetism. Before that I explained the low magnetism of Venus. Here I will show how this solves the problems on Uranus and Neptune as well. Both planets have been found to have strange magnetic fields, with poles nearer the equator than the spin axis. Currently, it is explained by computer models that claim to show that

unlike the magnetic fields of the terrestrial and gas giant planets, which are generated within their cores, the ice giants' magnetic fields are generated by motion at relatively shallow depths, for instance, in the water–ammonia ocean.

Of course we have no evidence for that, beyond a pushed computer model. That is from Wiki, but other mainstream sites will admit,

It is even surprising that Uranus has a magnetic field, since new evidence has thrown out the theory that an electrically conductive sea of ammonia and water exists in the interior of the planet.*

In fact, that is why we now have the magnetic field generated from the ocean instead of the core. But that brings up a whole swarm of begged questions, starting with "why would we see this on Uranus and Neptune and not Saturn and Jupiter?" Wiki is confused enough to say,

Neptune has a similarly displaced and tilted magnetic field, suggesting that this may be a common feature of ice giants.

But Jupiter and Saturn are also cold gas giants: are we supposed to believe that it is the "ice" that makes the difference? Come on, speak sense! Even the computer model doesn't show that, since freezing by itself can hardly move magnetic production from core to ocean.

No, something else is obviously going on, and I am here to tell you what it is. The planetary magnetic field they are talking about is not just generated by the planet. It is generated when the planet's emitted photons meet the ambient charge field of the Solar system. It is the *result* of this meeting, so we have to look at both parts of the equation. Current theory never does this and can't do this, since they don't have a charge field to work with at the macro-level. They have neither the ambient field nor the emitted field, so they aren't even close to solving this. They are still explaining planetary E/M fields by dynamos in the cores (or here, in the oceans). But of course they have zero data on that, since the core of the Earth is as invisible to us as the sub-oceans of Neptune.

But the charge field is what allowed me to analyze the magnetic fields of Venus and Mars. Although the magnetism of the Solar system component is high at Venus, as at the Earth, Venus is upside down to it, so the meeting is a cancellation of spins. Relative to the ambient field, Venus is emitting anti-photons. This nullifies most of the magnetic component of the field (although it doesn't affect the electrical component). This is how Venus maintains a strong ionosphere to ward off the Solar wind, despite a lack of magnetism.

With Mars, we have a completely different explanation. The low magnetism at Mars is due to a low ambient magnetism in the Solar system at that orbital distance, and that is caused by a meeting of the charges of the four big outer planets with the charge of the Sun. Mars just happens to be at a distance in between where the magnetisms nearly offset. The spins of the photons moving out from the Sun and the spins of the photons moving in cancel, which cancels the magnetic component of the charge field. So no matter what the local magnetism of Mars is, it can't maintain itself. It is emitted into a flat field, you see, and so it flattens immediately.

With Uranus and Neptune, current physicists are looking for one answer to both, but again, it is a different explanation for each planet. We have to analyze each one separately. The causes are related, but not equivalent. Uranus is tilted at 104^{o} to the Solar equator (tilt+inclination), and I have already showed why that is in my tilt papers. So we already have that to work with. Like all other spinning bodies, Uranus emits more photons near the equator. We can even pause here to show that this is why Uranus is warmer there than at the poles. Current physicists expect the near pole to be warmer, since it is closer to the Sun, but that would not be the expectation of anyone who accepts my theory. At that distance from the Sun, there is very little warming or warmth differential from near pole to far pole. Both are extremely cold. The greater warmth differential is going to come from within, caused by the recycling of the charge field. Since more photons are emitted at the equator, it is warmer there.

But back to magnetism. Historically, physics has assumed that the magnetic poles follow the axes of spin, simply because that is what we see here on Earth. But that was a poor assumption to begin with. It isn't that magnetism is aligning itself to the spin axes, it is that magnetism is aligning 90^{o} to the electrical field, since that is how electricity and magnetism work. Or, to say it in terms of my mechanical theory, the spin of the photon is always 90^{o} to the linear motion of the photon. The linear motion of the photons determines the electrical field and the spin determines the magnetic field. The two are orthogonal by definition, and this is what creates the right-hand rule as well as all the rules of the Solar system.

Although I have already explained this elsewhere, I will stop to explain it again. It is not difficult. Say you have a spinning top. You now give it a linear motion. You can give it any linear motion; all directions are allowed. But if it is spinning on the ground and you move it up or down, it won't impart any extra spin force to anything it touches. Say you move it up and have it hit your hand. Your hand

will feel a force from the upward motion, but no extra force from the spin, since the spin is in the other plane. Same for motion down. But if you move the top any direction to the side, anything it hits will feel both the force of the linear motion and the force of the spin.

So make this top a photon. The spinning photon can move any direction, like the top. But if it moves up or down, there is no spin component to its force. In the terms of E/M, the photon has an electrical force but no magnetic force. Although it is spinning, it can't impart that spin to anything it touches, since the spin is in the wrong plane. But if we give the photon linear motion in any other direction than up or down, it will have a magnetic component.

Now, let us study the magnetic component. Let us say our photon is either a sphere or a circle. It really doesn't matter since we have now limited it to x,y. I have shown that z is not magnetic. The axis poles are in z, but the spin motion and linear motion are in x,y. So even if the photon is a sphere, we can treat it as a circle. Let the linear motion be x, then. The spin is x,y, all the way round. But when we let the photon collide, the force of the spin will be at the tangent. The photon hits whatever it hits at its forwardmost point, by definition. Well, the direction of spin at that point is y, again by definition. The spin force is at the tangent. Since y is orthogonal to x, spin is orthogonal to linear motion, and magnetism is orthogonal to electricity.

With that under our belts, we return to a spinning planet. The planet is emitting its recycled charge field most heavily at the equator, due to simple momentum requirements. If you don't believe me, you can set up a simple experiment to remind you of the physics. Take any rigid sphere and poke it full of holes, with the holes equally spaced. Then set the sphere to spinning in any way you like, by any mechanism you have available. Then pour some liquid in the north pole of this sphere. Gravity will interfere with this experiment to a great degree, and at first the liquid will tend to come out the lower holes more than the upper ones, for obvious reasons. But if you can spin this sphere fast enough to counteract gravity (and not deform your sphere), you will find the greatest amount of liquid coming out near the equator. You can also spin your sphere sideways to gravity, which will cause more liquid to emit from the lower side, and will create other complications, but you will find the same thing.

If we take this to our planet, which has no external gravity to counteract, we find it emitting at the equator for the same reason. Spinning objects naturally create an intake at the poles and an emission at the equator.

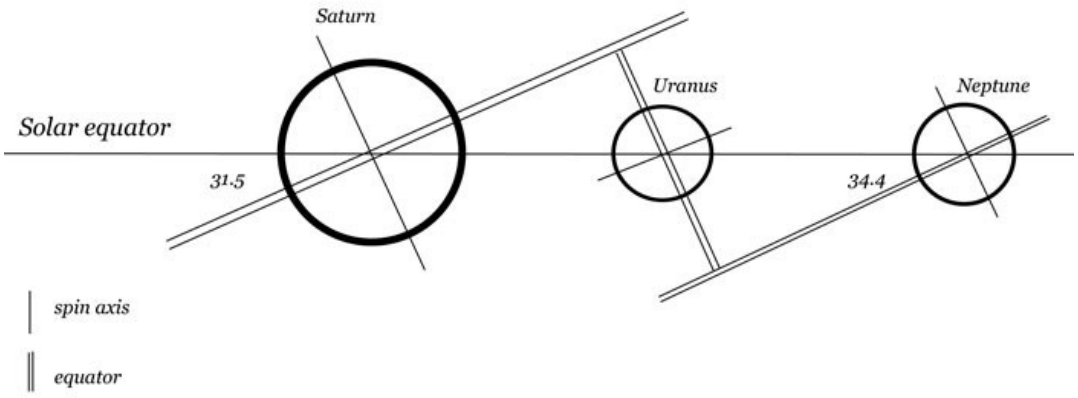
We start by looking at the linear motion of these emitted photons. The Sun is the main sphere in this game, so we start there. The Sun emits the first field, and this field is mainly in the Solar equator. If other spinning spheres are put into this game, they begin to pull in these photons and emit them. In doing so, they naturally align to the ambient field, matching their equator to the Sun's. Why? Well, let's look at what happens if they don't. Let us say we put Mercury in there first, and we let Mercury point his pole right at the Sun, in order to soak up the most photons in the most direct manner. That's fine as a matter of input, but now let's look at the output. The photons go in at the pole and come out at the equator of Mercury. They are then orthogonal to the Sun's photons. Photon fields are interpenetrable to a large degree, but no fields are completely interpenetrable, so over time, the Sun's field pushes Mercury's field over. The lesser field aligns to the greater, as we would expect.

You will say, “But how do the photons get into the pole of Mercury then? They can't curve, right?” No, they can't curve, but they can be deflected by ions. The ambient field is not just stiff with photons, it is also stiff with ions, and so we have a mechanism for stirring our pot of photons. The photon densities are highest in the Solar equator, but we have photons everywhere, going every direction. And

they are statistically "drawn" to the poles of Mercury because there is less outgoing traffic there. Precisely because Mercury is emitting most at the equator, he is emitting least at the poles. Less outgoing traffic means less resistance for ingoing traffic, and we have the appearance of potential there.

We have been looking at the linear motion of the photons, so the electrical component is aligning to the Solar equator, and then to the Mercury equator. Since the magnetic component is orthogonal to that, it appears to align itself with the spin axis. But it isn't aligning to the spin axis, it is aligning to the right hand rule.

Now let us transfer this logic and mechanism to Uranus. I have shown that the charge field at Uranus is not just Solar. Uranus gets a lot of charge density from both Saturn and Neptune (and Jupiter). We have to monitor all four charges at Uranus, to find what he is going to do as a matter of tilt. We have pretty equal amounts of charge coming from both sides. This creates a large spin nullification in the ambient field, leaving it with only about 16% of the magnetism we might expect from the available charge [(104^o – 90^o)/90^o]. At first you would think this would make Uranus like Mars, where the field is also nearly balanced, causing only a reduced magnetism. So why is Uranus tilted so much more?



To find out, we start by looking at the electrical fields of Neptune and Saturn. Remember, the electrical fields are aligned to the equators. Saturn is tilted and inclined at 31.5^o and Neptune at 34.4^o. So we have nearly parallel running fields, and these fields are 20.6 AU apart. Next, we look at how these two fields can actually get to Uranus. To see, we draw a line from one field to the other, through Uranus. The inclination of Uranus is 6.48, so the *orbit* of Uranus is almost parallel or flat to both Saturn (5.5) and Neptune (6.3). For this reason, many would rush by this, not seeing that parallel planes are not "the same plane" unless they are parallel at zero. You can see this from the diagram above. The equators of Saturn and Neptune are nearly parallel, but they are very far from meeting, even in this compressed diagram. When we put them 20.6AU distant, the fact that they are parallel only *ensures* that they cannot meet at Uranus at any strength without creating an angle. And this ensures that the electical field of Uranus cannot be in a plane parallel to them. If it were, they would hardly meet. No, Uranus turns to align his field to the other two fields, and in doing so we get the lines we see above, roughly.

The average tilt+inclination of Neptune and Saturn is 33^o. If we draw a line from one electrical field to the other, that line will have a maximum possible angle of about 57^o and a minimum of zero (the angle would go to zero when the planets were fully separated, both as a matter of distance and inclination**). So the average angle will be half that, or 28.5^o. If the angle at the equator is halved, the angle at the

pole will also be halved, giving us 16.5° there. 90 + 16.5 = 106.5°, which is roughly the known tilt+inclination of Uranus. In other words, Uranus *is* aligning its equator to the local electrical field, just like the other planets. But since the local electrical field is skewed, the tilt of Uranus is, too. Unlike most other planets, Uranus is aligning not just to the Sun, it is aligning to two bodies on opposite sides of it. Uranus is aligning to two opposite electrical fields, not just one. Remember that Uranus is the only body in the Solar system with larger bodies on both sides of it. As I said in the tilt papers, this is crucial. The nearer bodies, being larger, set the local field.

The logical question here is, "Given that the Sun and Jupiter must have greater charge influences at Uranus, even according to your own math, why is Uranus aligning to Saturn and Neptune instead of the Sun and Jupiter? The Sun and Jupiter would only appear to be correcting the angle of Uranus by about 2°, but the Sun alone should have about 20 times more charge than Neptune at that orbital distance. Why doesn't the Sun's charge push Uranus back to normal?"

Great question, since it allows the reader to see how my math works once more. As we saw in my tilt papers, the Sun's charge field only sets the baseline, it doesn't cause tilt. If we have the Sun only, we have a tilt of zero. As I showed with Mercury in those papers and this one, the Sun's charge causes the planet's axis to stand straight up, because the electrical fields are aligning. That is, the equators are aligning, so the axes do, too. Since Jupiter is inside Uranus, and its charge field is very near the Solar equator, its influence gets lost in the Sun's influence, for the most part. Only because Jupiter has some tilt and inclination does it enter this problem. That small deviation of Jupiter (9°) from the Sun's charge field is the thing here that changes our solution here by about 2°.

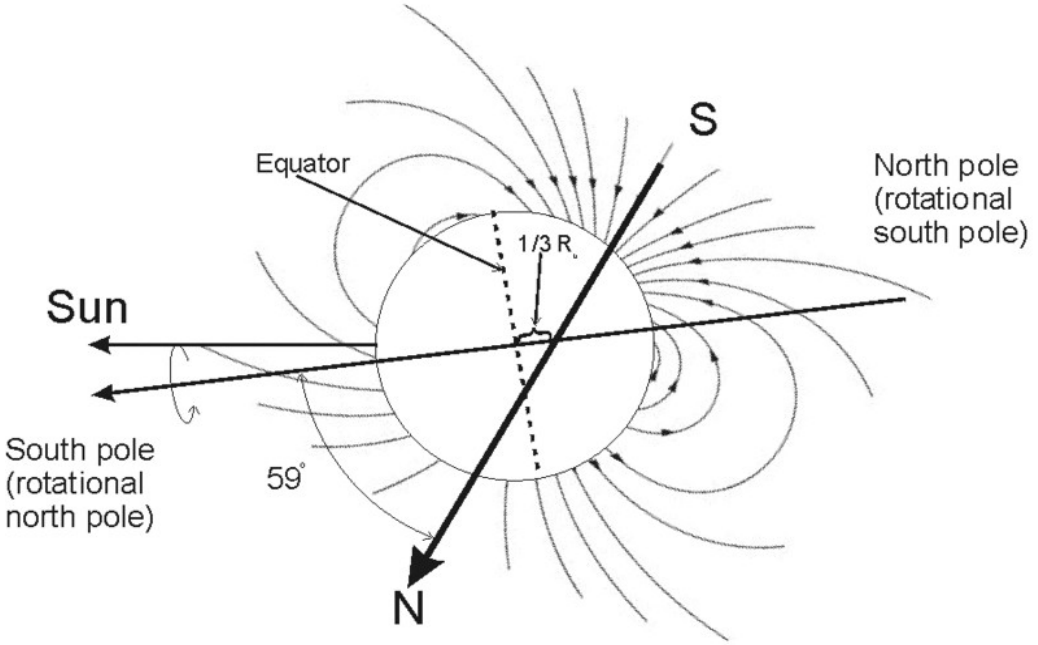
You will say, "Then why isn't Saturn's charge lost in the same way? It is also inside Uranus." It isn't lost because Saturn has a much larger tilt+inclination than Jupiter, about 3.5 times as much. All the charge from Saturn that is not in the plane of the Sun acts to cause the tilt. Same for Neptune.

You will say, "But that seems to be circular. You are explaining tilt by tilt. It is the fact that Saturn has tilt that allows it to cause Uranus to have tilt." Well, it is a line of cause, but it isn't circular. Yes, it requires previous tilt to cause later tilt, but that isn't circular because time passes, and because Saturn is causing Uranus' tilt, not its own. If I were explaining Saturn's tilt by Saturn's previous tilt, that would be circular. Yes, it requires that we have some original tilted planet or planets whose tilts were not caused by other planets, but that only means we need one tilted planet in the past to enter the Solar system and cause a line of instability. I don't see that assumption as a problem.

You will say, "Why not just propose that planet was Uranus? Then you are through. You don't have to explain why Uranus is tilted in that case." Yes, I could, and that is what the mainstream normally does. It either proposes that the planet congealed out of the nebula that way or was whacked by some giant asteroid. But I don't happen to think that is what happened to Uranus. I am looking for the right answer, not the easy answer. I read the low inclination of Uranus to mean that it is not a recently captured planet. It is old. If it is old, it should have been straightened up, in normal conditions. Both the Sun and Jupiter *would* act to stand it up, over very long timescales, and they are doing that now. But, as I just showed, they are being strongly resisted by Saturn and Neptune. The Sun and Jupiter will have to straighten them *all* up simultaneously, and that will take a gloriously long time to do. And in the meantime, other instabilites may have caused even greater problems. As I have already shown, the Solar system has greater problems than a few tilted planets. It has Saturn, Uranus and Neptune, who will all want to go below Jupiter. That is going to cause major headaches in the future. If we have aliens watching us, it isn't just because of nuclear weapons or oil spills or species extinction. It is because our Solar system is a time bomb. Long before our Sun burns out, the big planets are going to

get us in trouble.

Now we only have to explain why the magnetic field of Uranus is not orthogonal to the electrical field. The easiest way to explain it is to remind you that we have only calculated the two largest electrical fields above. The Sun's electrical field and Jupiter's are still present, and they are not negligible. They may not be providing much of the tilt, but they are providing a lot of charge. That charge is coming from the direction of the Sun, roughly, since Jupiter's inclination and tilt are very low (about 9° total). And since Uranus' pole is pointed in that direction, we have these third and fourth fields aligned with the axis instead of the equator. This is the cause of Uranus' "quadrapole" character: competing electrical fields, two of which are roughly orthogonal to the other two. To calculate what the magnetic field will do under such circumstances, we have to measure all four fields at Uranus. I have already done that in my Bode paper. As a matter of size alone, the Sun leads with about 25.7, then Jupiter at 1.97, Saturn, at 1.23, then Neptune, at 1.13.



As you can see, the tilt of the magnetic field of Uranus is 31° from the equator, at about -17° or 343°. Remember that the average tilt+inclination of the electrical field of Saturn and Neptune was 33°. But their angle was in front of their poles, and Uranus' angle is behind its equator. Why is that? Well, Uranus aligns his local electrical charge to Saturn and Neptune, for the reasons above. But since the electrical field from the Sun is much stronger, the main magnetic field still aligns to that. The field from the Sun can't cause tilt, but that field still has a magnetic component. As always, the Solar field carries a magnetic field with zero tilt. But since we have a quadrapole here, we have a second magnetic field, which is orthogonal to the electrical field at the equator, caused by Saturn/Neptune. This lesser magnetic pole would be at 284°, pointing almost back at Neptune. But of course our meters can't separate the two fields. In practice, the two fields combine to create an overall magnetic field. If the magnetic pole were right between the Solar pole and the Saturn/Neptune pole, it would be at -38° or 322°. Instead it is at -17°. This is simply because the Solar field is stronger. From the numbers, we can

see that the Solar field is about 3.5 times as strong, even near the surface of the planet. So despite the fact that all the internal charge is being emitted at the equator, and that it therefore should set the magnetic pole at 284º, the ambient field almost immediately moves it 59º, to 343º. I predict that the magnetic field of Uranus will vary depending on the altitude at which you measure it. NASA doesn't tell us how or where it measured the magnetic field of Uranus, but it is likely that this is a crucial part of the data.

I also have an idea concerning the push-back of the magnetic axis from the center of mass, as we see in the diagram. I intuit this as the outcome of the strength of the Solar charge field once again. I have often said that it is useful to think of charge like wind, rather than like potential, and we can almost see the charge from Jupiter and the Sun sweeping across here, blowing the entire axis back, north and south pole alike. But why would the Solar field do that here, and not, say, on Mercury, where it is much stronger? We don't see the axis of Mercury blown back. I propose it is because Mercury doesn't have this quadrapole character, with the multiple influences. Mercury's axis can't be blown back, because it is caused by the Solar field, and is foundationally connected to it. The Solar field can't blow itself back, any more than a photon can knock its own spin out of center. But the magnetic axis of Uranus shown here is a sort of secondary axis, caused and created by Neptune and Saturn. As such, it must be connected to *their* electrical fields, not to the main electrical field of the Sun. The magnetic pole that is diagrammed here cannot be connected to the Sun's electrical field, since if it were, it would be straight up. The two can interact, but they are foundationally unconnected. This means that there is no reason that the two crossing points have to be at the same place. And it means that since the photons of the Solar field are moving out from the Sun, they are free to push this second charge field in the same direction.

"How do they do that?" you may ask. "Haven't you said that photon fields are mainly interpenetrable?" Yes, I have said that. It may be ions acting as a mediator between the two charge fields. The Solar wind may be blowing the second charge field back.

"But I thought you said that photons drove ions. Can it go both ways? Can ions drive photons?" OK, by talking in a sloppy manner, you are forcing me to be more clear. Ions don't "drive" photons. But the presence of ions gives the photons something to hit, to be redirected. Since photons do hit ions, the ion field can affect the photon field. The ions can *appear* to move the field of photons. And since the first field of photons *does* drive the ions, it can appear that one field of photons drives the second field of photons, via the ions. I think that is clear enough.

So what we may have here is the Solar and Jovian charge field using the Solar wind and local ions to appear to push back the entire charge field of Saturn/Neptune, as it exists at Uranus.

We can also see why the N pole of Uranus is toward Saturn: Saturn is the stronger field.

Finally, we can see why Uranus would have more magnetism in the northern hemisphere. The push-back of the second field means that larger parts of the north have two fields stacking. In the south, the two fields cross, creating nullification. See how the magnetic pole crosses the equator well below the spin axis? That means the magnetic axis has to cross a line of emission. Photons are being emitting heavily all along the equator. That acts to destroy the magnetic axis, or more rigorously, the magnetic field represented by the axis. Ions driven up by the emitted charge field will confuse or cancel magnetism in that area.

Now let us move on to Neptune. Hopefully we can dispense with Neptune much more quickly, now

that we know the drill. Wikipedia says,

The large quadrupole moment of Neptune may be the result of offset from the planet's center and geometrical constraints of the field's dynamo generator.

But we now know enough now to see that is absurd. Neptune's quadrapole character is caused by Uranus' quadrapole character. Once Uranus is given this offset tilt, it must affect the planets around it. In a nutshell, Neptune is receiving two strong electrical fields, one from the Sun and one from Uranus. Since these fields are nearly orthogonal, the quadrapole is once again created. And since the two fields are foundationally separate, the smaller one is free to be blown back by the larger one.

*http://library.thinkquest.org/28327/html/universe/solar_system/planets/uranus/interior/magnetic_field.html
**In other words, when Saturn and Neptune are opposed to one another, and one is elevated (above the Solar equator) and the other is not.
