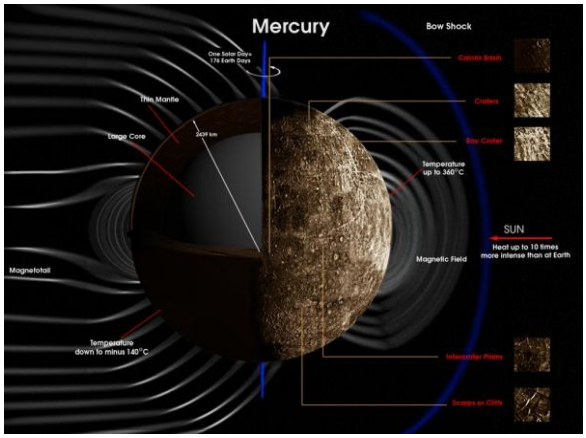
return to updates

Why is Mercury's Magnetism 1% that of the Earth?



by Miles Mathis

First published July 18, 2012

The Mariner 10 flybys in the the mid 1970's provided the first data on Mercury's magnetic field. Recently, the MESSENGER flybys have confirmed that the magnetic field of Mercury is about 1% that of the Earth. As an article from Johns Hopkins in February of this year [2012] says:

This discovery was a surprise to many, because magnetic fields in Earth-like planets are thought to be generated by convective motions in a fluid metallic core. Thermal history models for Mercury, the smallest of the terrestrial planets, however, predicted that a pure iron core would have long since cooled to the point that the entire core should now be solid. Moreover, neither Venus nor Mars has a global magnetic field.

The author admits that this question has still not been answered. However, my theory of magnetism as a straight function of spin can explain it immediately, in a few lines of math.

Mercury, like all celestial bodies, creates its magnetic field from the ambient magnetic field. In other words, the magnetism of large bodies comes from the magnetism of the field around it. And the field around it is magnetized due to photon spin. Magnetism IS photon spin. Spinning photons spin the ions they collide with, and this spin is magnetism.

Now, photons can be spinning in either direction, so we have what we might call photons and anti-photons. Anti-photons are not mysterious in any way, they are simply upside down. In our galaxy, we have both photons and anti-photons, and the Solar System moves through pockets containing both. But it rarely moves through pockets that are equalized. Photons and anti-photons can mix, but whichever one dominates in numbers tends to switch the other over time. In other words, if pockets of photons and anti-photons come together, and if the photons outnumber anti-photons, the photons reverse the

spins of the anti-photons over time, turning them into photons. All this is done by straight collision, in strictly mechanical ways.

If equal numbers of photons and anti-photons are present in a pocket, that pocket will be non-magnetic overall, since the spins will cancel. The more unbalanced the pocket is, the more magnetic it will be. A predominance of either photons or anti-photons will create magnetism, since the spins will not cancel. For most purposes, magnetism is magnetism, and there is no difference between magnetism and anti-magnetism. Only in special cases—like beta decay—will it matter which one is present.

Normally, the Solar System will be moving through unbalanced fields, and the ambient field will be magnetic. If the field is left magnetic, the Sun will be left magnetic and all the bodies in the system will be left magnetic. This is because all the bodies are recycling charge, and the bodies get their own spin from the photons moving through them. Furthermore, any body entering the system will be made left magnetic over time. That body will be receiving most of its charge from the Sun, so it will take on the charge profile of the Sun.

Venus is right magnetic, and from that we may infer it is a newer addition to the system which has not been equalized to the rest. I predict its slow spin is caused by this mechanism. It was originally spinning "right" faster than it currently is, but the ambient field has slowed it. Over time, it will be stopped and then re-spun to the left. This means that I am predicting a current slowing of the spin of Venus. I am not sure if this has been confirmed yet or not. Venus may have come in from outside the system recently, or it may have been flipped in some collision or close pass.*

I have shown in previous papers that this explains Venus' lack of magnetism. Because it is spinning opposite the ambient field, the two spins cancel at the surface of Venus. This does not affect the electrical field (as much), allowing Venus to keep an ionosphere capable of resisting the Solar wind. When Venus eventually switches spin direction, it will develop a global magnetic field. As it slows its spin, it will move a tiny bit closer to the Sun. As the spin rebuilds left, Venus will move back out.

I needed to gloss this mechanism so that you would understand the magnetic field of Mercury. The spin of Mercury is a function of the summed strength of the magnetic field around Mercury. It is a direct response to the photons coming out of the Sun. It has almost nothing to do with core or convection theory, except so far as recycled photons affect the core and convections. To read more on this, see my recent paper on the charge field of the Earth.

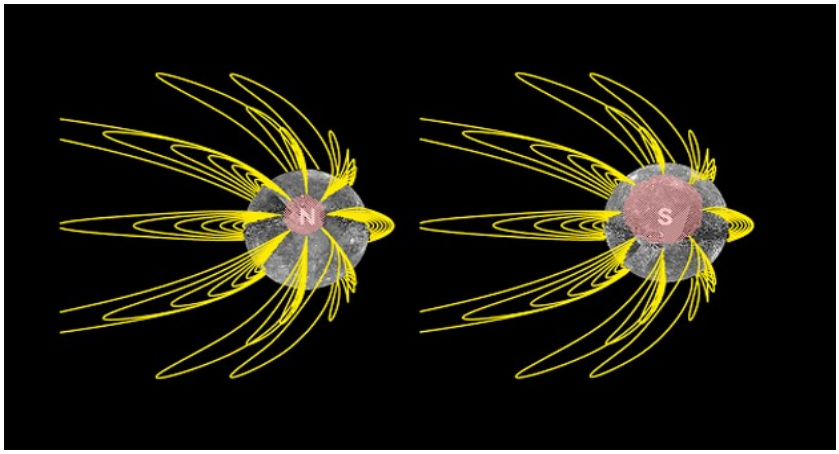
Therefore, we can calculate the magnetic field of Mercury straight from its spin. Mercury has a spin rate 58 times less than the Earth, and a radius .383x. In equal fields, we would predict .383/58 = .0066 times less magnetism from Mercury. However, its semi-major axis is .387 that of Earth, which makes the charge field more dense at Mercury than the Earth. This will bring that number up a bit. How much? Well, we can calculate relative density at given distances by using the surface area equation (applying the surface area to the surface of the orbital sphere created). Since the surface area equation has a radius squared, we take the square root of .387, which is .622. Then we just divide: .0066/.622 = .0106. The spin of Mercury tells us we should expect .0106 times as much magnetism from Mercury as the Earth. A match, as you see, with only a few lines of simple math.

Of course, this begs the question of why Mercury is spinning so slowly. Given a denser field, we would expect it to be spun faster. We can even do some simple math to show how much more magnetism Mercury would have if it were perfectly centered and spinning like it should. Mercury has .054 the charge of Earth. But it has 1.82 more magnetism from an imbalanced field (see the

antiphoton calculation I do for Saturn, for more on this). That brings our number up to .098. Since Mercury and the Earth have about the same angular width as seen from the Sun, this gives us an estimate of .1. From this, we see that Mercury should have 9.2 times the magnetism it has. Which means it should be spinning that much faster than it is. Mercury's magnetism is actually being suppressed by its unnaturally slow spin. Its offset center of mass is causing it to lose 9/10th's of its magnetic field strength. This offset is currently estimated to be 600-700m, which tends to confirm my analysis. But that is less than half the Moon's estimated offset of 2km, and I feel it is probably too small by a large margin. The eccentricity of Mercury indicates a higher offset as well. From comparing Mercury to the Moon, I would predict an offset of something like 6km. I calculate** Mercury would need an offset of about 7km to be synchronous, and it is near that already, having lost 92% of its potential spin.

And since the Moon suffers from the same center of mass offset, we may assume that the Moon's magnetic field is being suppressed by the same mechanism.

This article from Johns Hopkins provides further confirmation of my charge field theory via this diagram and subtext:



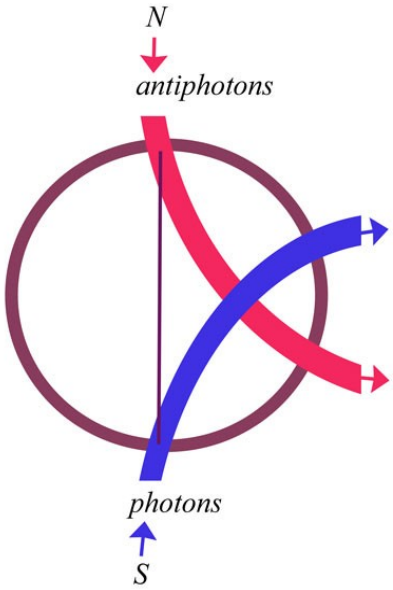
We are viewing Mercury from the north and south poles. The subtext states:

Illustrative magnetic lines of force (yellow lines) for two views of Mercury. The polar region (red shading) within which the local magnetic field opens to the solar wind, and is not connected to the opposite hemisphere of the planet, is four times larger in the south (S) than in the north (N). The magnetic field offset strongly enhances the exposure of the surface at high southern latitudes to bombardment by charged particles in the solar wind.

Remember that I have stated that bodies recycle charge by taking it in at the poles. We have direct confirmation of that here. The author states that "the local magnetic field **opens** to the solar wind." No, it opens to the charge field. This is where photons go in. Magnetism and electricity simply follow the photons. I have also proposed, in my models of the Earth, that because the IMF (interplanetary magnetic field) is composed of more photons than antiphotons, more charge must enter the south poles of normal planets (except Venus). I have recently used this fact to explain higher terrestrial

temperatures in the north, more magnetic activity, more storm activity, more hurricanes, and so on. On both the Earth and Mercury, more charge comes in via the south pole. This south charge is then emitted heaviest 30° north.

[continued below]



This is the standard profile in the Solar System. This also applies to the Sun, of course, and we already know the largest Solar holes tend to be at or near the south pole. The Sun recycles more charge through its south pole.

*I am not here to confirm or unconfirm Velikovsky, I am simply here to relate my own discoveries.
**Mercury receives 2.39 times more charge than the Moon, but has 4.33 times less offset (as a percentage of diameter).