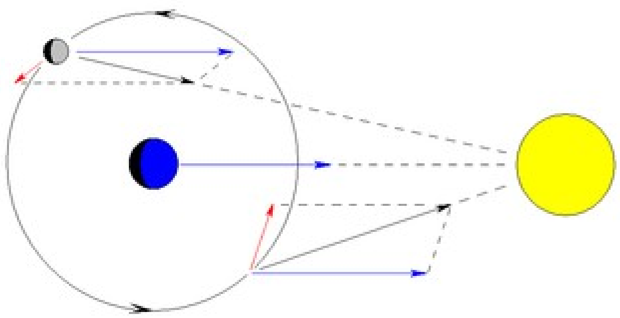
Perturbation Theory

in the Light of Charge



by Miles Mathis

In a previous paper on Laplace, I showed that the 3-body problem has been misrepresented from the beginning. Historically, the motions of celestial bodies have been taken as caused by gravity only, with perturbation theory explaining the remaining "inequalities." But since the celestial field, like the quantum field, has always been unified, the historical analysis has been flawed from the foundations. The celestial field is a dual field that includes charge in vector opposition to gravity. Once this is seen, the equations can be rewritten with no chaos, no approximations, and no pushed math. In this paper, I will extend the comments I made in that earlier paper, showing specific examples of where the charge field can be seen hidden in historical field equations.

As a good place to start, we can go all the way back to Newton's early attempts to write equations for the inequalities in the Moon's orbit. In Proposition LXVI of the *Principia,* Newton tries to begin solving this 3-body problem by giving the new variance to the Earth rather than the Moon. He says that the straight-line pulling forces of his theory might be modified in this 3-body problem if we let the Earth move due to the attraction of Sun and Moon, rather than be stationary. Of course that can't be the real mechanism, since he already has those motions represented in his initial math. In other words, the first equations (that didn't work) include the Earth's force on the Moon. Now he wants to turn around and calculate the Moon's force on the Earth, and include that so that he can push his equations toward data. But according to his own theory, that is impossible. For strictly logical reasons, when looking at any two bodies, you have to keep one of them stationary. That is because you have to run the equations from one point of view. You can't solve them from two points of view at the same time. As with Relativity, you have to pick a point and stick with it. That is not just a rule of Relativity, it is a rule of any field math. You can't solve from two points in the field, because that is like trying to answer two questions at once. Newton's solution is a field solution just as much as Einstein's, and in both the same rules apply. You have to pick a body and solve from there. Newton has already picked the Moon, and he cannot go back and pick the Earth also.

For those who don't see what I mean, look at the initial equation

$F = GMm/r^2$

That's already a field equation. After you calculate that force, you can then calculate an acceleration on one of the bodies. That acceleration can then give you a motion over a defined interval. But you have to then assign that motion to *one* of the bodies. To do that you have to hold the other one still. That's because you have two bodies, but only one force.

You will say, "Why not split the force, giving the greater part to the greater body? Then you can calculate motions for both bodies." Yes, you could do that, but that isn't what Newton or anyone since him has done. What they do is calculate a force on the Moon by the Earth, and then turn around and calculate a second force on the Earth by the Moon, *of the same size.* They don't split the force, they double it. This is one way that extra 2's have crept into the field equations. This is what I mean by trying to solve from two points in the field. If you aren't extremely careful you get errors like this.

But it isn't just an error of math, one that can give you extra 2's. It is also an error of kinematics, since it seems to give you a mechanics where there is none. Newton thinks he can get another variance from this, explaining the extra math he is planning to do, but he can't. In short, his math may be a step in the right direction, since it may begin to fill the hole in the field equations. But the math is unsupported mechanically, due to the fact that his mechanical assignment fails. Newton can't assign his extra motions to gravity, since they are *already* assigned to gravity. He is trying to assign the pull both ways to gravity, you see, but both pulls are already assigned to gravity in his initial equations. He can't go back in and assign them a second time.

His assignment fails because his initial question is, "Why does the Moon move as it does?" That question should logically be answered by looking at forces *upon* the Moon, or accelerations by the Moon. The answer cannot logically include forces *by* the Moon back upon the objects that are forcing it. That would create an infinite feedback, you see, caused by the logical fallacy. And it *has*, in fact, caused an infinite feedback: what we now call chaos theory.

If you read the *Principia*, you will see that Newton neither insists upon this mechanical explanation; nor does he actually *explain* it. It is more a passing suggestion, with no theoretical backup or justification. As usual, Newton is more interested in finding a heuristic solution than he is in doing actual physics. As with all other physicists after him, and most before, he is more interested in math than he is physics. He was never particularly interested in explaining why or how his solutions worked, he was only interested in the solution itself. And his attitude has carried over to the present moment.

Admittedly, this was never clear until now, and I can only say this because of the hindsight given me by my own unified field equations. Now that I know the charge field is part of the unified field—and always has been—I can see precisely how it is fouling up Newton's solutions and all the solutions after. You see, it is not the motion of the Earth that is the mechanical cause of Newton's extended equations here, it is the charge field. Newton's gravity-only solution failed because he didn't understand that his field was a dual field, and that it always included charge. Yes, charge was already included in his initial equations, hidden in his constant. But because he didn't know that, he didn't realize that his required variance was hidden there as well. In short, the field is a compound field of gravity and charge, and there is a degree of freedom between the two. This degree of freedom is due to the fact that they scale differently. Charge is mediated by photons while gravity isn't, so charge gets bigger as we get closer to the size of the photon. Gravity doesn't. For this reason, you have to scale the two fields to one another in each and every problem. There is no standard scaling of the two fields. The *sizes* of your objects have to be included at all times, not only their relative sizes, but their sizes relative to the photon.

Because Newton, Euler, Laplace, Lagrange, and all the others didn't know this, they had to find another way to solve. Following Newton's initial suggestions, as above, they decided the best way to solve was to use power series expansions to give them more terms, then to fit those new terms to the holes they needed to fill. Since this sort of math is nearly infinitely malleable, they were able to do that, given time and enough paper. But since Newton was not able to point to the correct mechanics, they weren't either. They learned early on that the best thing to do was to ignore all mechanics. Don't even bring it up. Don't even ask the question. Just plop down the math and hope no one remembers to ask what supports the math. If the math is long and difficult enough, no one will remember to do this. They will become so absorbed in the math, they will forget to ask for the physics. This is what happened historically, and no one has asked the question in 300 years.

But, as I said coming into this paper, the historical math gave us many hints along the way, and I can now go back and circle some of these hints for you. Martin Gutzwiller wrote a very clear and informative paper* on the history of the 3-body problem in 1998, and that is what I will reference here. In section E, Gutzwiller writes out Newton's implied mathematics from Prop. LXVI in equation (20):

$$G_0Sx'[(1/\rho^3) - (1/r'^3)] \approx 3G_0S(x'/r')(x,x'/r'^4)$$

It is wonderful that Gutzwiller thought to rewrite the equation in that second form, since it proves my point. You only have to notice that the last term is written as $1/r^4$. What this indicates is that although Newton's kinematics is a hash, his math—rewritten in a variant form—clearly contains the charge field. As I have shown in many places, the charge field inside a gravitational field must change by $1/r^4$. The reason this reveals itself in Gutzwiller's rewrite of Newton is that the last form of the equation above is written as a product rather than a differential or sum, as you see. And that mirrors the way the two fields are expressed in Newton's original field equation

$$F = GMm/r^2$$

Since both gravity and charge are inside the mass variables—which I have shown should be written as Density X Volume, DV, instead of M—they are written as a product. It is density *times* volume, or gravity *times* charge. I have shown that solo gravity changes only as the radius, which again is what we see in Gutzwiller's rewrite. The term x'/r' is the solo gravity part of that equation and $x,x'/r'^4$ is the charge part. The equation has to be written in the right form for us to see the mechanics it represents, and until now, it hasn't been in the right form. Remember, as Gutzwiller shows, Newton wrote the equation this way:

$$\Psi \approx 2\pi [1 + (3\omega^2/2n^2)]$$

which is completely opaque as regards the actual field.

However, if we back up a step, we get more hints of the charge field. In equation (18), Gutzwiller shows us Newton's first step:

$$F(r) = (-GM_0m_0/r^2) + m_0\omega^2r$$

And tells us,

Without explaining what he is doing, Newton proposes as the third example of the advancing apsides the case of a small perturbative force that is repulsive and varies linearly with the distance.

That should astonish you. Why? Because Newton has proposed a perturbative force that is *repulsive* and that is arrayed against the gravity field as a vector. That is precisely what I have shown charge is. It should also astonish you because Newton's gravity field cannot support a repulsive force. Gravity is *never* repulsive. So, logically, this perturbation cannot be an extension of the gravity field. It cannot be a gravitational perturbation.

This is profoundly important, because perturbation theory is considered to be an extension of the gravity math beneath it. It is considered to be nothing more than field corrections. But if any of the perturbations are repulsive, then they cannot be corrections to the gravity field, which is always attractive. Any perturbation that is repulsive is a necessary sign of the second field.

Newton is also pushing his equation toward my own UFE, which as we know is

$$F(r) = (-GM_0m_0/r^2) + (m_0v^2r)(2/rct)$$

He is also pushing toward the Lagrangian, although Gutzwiller doesn't make the connection. Remember, the Lagrangian or Hamiltonian is currently sometimes written as

$$H(p_x, x) = p_x^2/2m + V(x)$$

Since $p = mv$ and $V = -GMm/r$, we can rewrite that as

$$H(p_x, x) = mv^2/2 - GMm/r$$

then if we want that as a force F instead of energy, we simply divide through by r:

$$F = mv^2/2r - GMm/r^2$$

Reversing the terms gives us

$$F = - GMm/r^2 + mv^2/2r$$

Newtons equation from Proposition LXVI was

$$F(r) = (-GM_0m_0/r^2) + m_0\omega^2r$$

Gutzwiller treats that equation as a perturbative addition to the Newtonian field, but it is actually a pretty close pass to the Hamiltonian, as you see. Even without any mechanics, Newton was within a mole's whisker of current math centuries ago.

Also notice that Newton explicitly writes the velocity as an angular or orbital velocity, contradicting the mainstream equation, which tags it as a linear velocity. This confirms my previous analyses, where I showed physics had lost the meaning of Newton's original variable assignments.

While we are in section E of Gutzwiller's analysis, we can look for a moment at another important comment. One of my readers drew my attention to this. We are reminded that Tycho Brahe found an anomaly in the Moon's plane of orbit. Gutzwiller says,

It is as if the Moon's orbital plane straightens up a bit when facing the Sun, which is reasonable on physical grounds.

Well, it is reasonable, but not with a gravity-only theory. What we would expect from a gravity-only theory is the Moon gaining orbital radius when nearest the Sun, in response to the extra Solar pull at that position. Instead we see the orbit being pushed toward a parallel with the Solar equator. Gutzwiller jets right past any close analysis here, which is curious. He says the physics is reasonable and moves on. But the physics is reasonable only if you have a unified field, and if charge is allowed to enter the equations. It is pretty clear at a glance that what is "standing the Moon up" is increased charge, which I have shown is heaviest at the Solar equator. The Moon is entering a charge maximum in this position, and since that charge is moving directly out from the Sun, of course it will act to push the Lunar plane in line with itself. The Solar wind will also act to do the same thing, and the Solar wind is a function and result of the charge field.

This becomes even clearer when I remind you that Newton's proposed perturbations in this section are repulsions. It is a repulsive variation that must be causing these perturbations, and repulsions are caused by charge, not by gravity-only.

This shows once again that the big maths are mostly misdirection. The Lagrangian and Hamiltonian haven't simplified the solution, or even perfected it, they have only muddied it. They have obscured not only the simpler field math of Newton, they have obscured all the mechanics underneath. Newton bypassed or misassigned the mechanics with this equation very early on, and no one after him was able to dig it back out. He mistakenly thought that this perturbation was an outcome of the Earth's motion, when it was really an outcome of the charge field. To this day, people like Gutzwiller imply that Newton was pointing at a barycenter solution here, when he was doing nothing of the sort. As I have shown, this isn't about a barycenter, and it isn't about action, and it isn't about kinetic and potential energies arrayed against one another (as we are taught with the Lagrangian and Hamiltonian). It is about gravity being arrayed against charge. Newton already had a close brush with the Unified Field Equation here in Prop. LXVI, and the Lagrangian *is* a UFE, as I have shown. *All* these historical perturbation equations are better or worse unified field equations, and they all contain the charge field.

We see this once again when Gutzwiller begins discussing the solutions of Clairaut. On page 607, Gutzwiller tells us

Clairaut (1747) now proclaimed as a great discovery that the distance dependence of the universal gravitation had to be modified for short distances by adding a term in $1/r^4$ (see the Ph.D. thesis of Craig Waff, 1976). He was immediately taken to task by Georges-Louis Leclerc, Comte de Buffon (1747), his famous colleague from the section of natural history, who was unwilling to believe that an important principle of physics could end up leading to a fundamental force with a complicated mathematical form.

There is our $1/r^4$ term again, as you see, indicating the charge field. But rather than pursue this, Gutzwiller implies that Clairaut was wrong, telling us that "he went back to work a little harder." Gutzwiller then switches to his own math rather than that of Clairaut, and in doing so writes all the perturbations as sums rather than products. This has the effect of guaranteeing that you won't see a $1/r^4$ term again.

Despite that, Clairaut was correct in the beginning: his "great discovery" was one more indirect discovery of the charge field. If Clairaut or anyone else had thought to write the perturbations as products of the two fields (charge and gravity) instead of as sums, all this might have come out centuries ago instead of now. In fact, if Newton had thought to assign his perturbation to a second field, instead of to a motion of the Earth, he himself would have solved the entire problem before all those guys on the continent even had a peek at it. Gutzwiller has inadvertantly made it clear how near Newton came to doing just that.

It is only because Newton wasn't able to see the second field in his equations that we have had to put up with several centuries of pushed math. As I hope you can now see, a simple clean-up of the first equations would have allowed for a direct solution to the multi-body problem. But because the first equations were always wrong, they required an endless line of corrections, corrections that are still being offered by top mathematicians. That is what modern perturbation and chaos theory are all about, you know. The field equations are considered chaotic because the current solutions never close on a final answer. But, as I have shown here and in many other places, it is not chaos in Nature that has prevented a classical solution. It is chaos in the equations that has done that. Strictly speaking, the equations are not chaotic at all, they are simply wrong from the foundations. None of the famous mathematicians ever discovered the mistakes at ground level, which required them to make all the repairs at altitude. And strictly speaking, these are not really repairs, they are patches. What they were always looking for was a correction to the initial equations, a single correction that would then push everything above it into line. They never found it. It could never be found as long as the field was required to remain gravity-only. Only by admitting the existence of charge in the field equations, and by rewriting the equations as unified equations, can this problem be solved once and for all.

That is what I have done. To see an example of my new unified field math applied to a specific multi-body problem, you may read my paper on Bode's law, where I am able to calculate the orbits of the four Jovians (Jupiter, Saturn, Uranus and Neptune) from unified field numbers of those bodies and the Sun. That is, I do a 5-body problem with simple math, matching data to several decimal places. That has never been done before. In a similar way, in my paper on Lagrange points, I calculated the orbit of the Moon using unified field numbers of the three bodies, including charge. That had also never been done before. And in my paper on eccentricity, I show how the same simple math can be used to calculate not only orbital distances, but also orbital anomalies like eccentricity. And in another paper, I show how axial tilt is also an outcome of the unified field. Currently tilt is not even solved using perturbation or field theory: it is said to be an outcome of collisions.

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