Gravity is a Magnetic Function

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Abstract: Mass and the amp meter are equivalent. As a result of this I will demonstrate that gravity is a result of magnetism due to the magnetic fields of the particles associated with matter(protons, neutrons, and electrons). Their magnetic fields, particularly the one of the electron since it is much larger than the other two gives a value when plugged into the proper magnetic field equation that matches the acceleration of gravity at Earth's surface. Objections that magnetism is responsible for gravity are expected. Therefore, I will deal with the two main objections raised that seem to imply that magnetism couldn't be responsible for gravity immediately after the calculated result. The first objection deals with the inverse square law and the second deals with the monopole nature of gravity. After answering the objections, I will demonstrate the meaning of the gravitational constant as it relates to magnetic units and further support that mass and the amp meter are equivalent.

Mass Equivalence

Let's look at two magnets which are aligned to attract to one another. Let's also assume that these are very strong magnets which require us to hold them apart from one another or else they will go towards one another and meet. Now, currently we are holding them apart and assuming nothing else is impeding them from going towards one another what will happen when we release the two magnets from our hold? Will they...

a)stay in place? Obviously not. They are attracted to one another.

b)move away from one another? Obviously not. They are attracted to one another.

c)move towards one another until they meet <u>BUT</u> do so at a steady unchanging rate of velocity? In other words their velocity never changes as they approach one another. This obviously cannot be true either because they start at speed of zero relative to one another so a change in velocity which is acceleration is taking place before they meet. We can also easily see magnets under these circumstances continue to gain velocity from the standstill.

So we're left with only one possibility.

d)The magnets accelerate towards one another (i.e. picking up velocity as they approach one another).

Anyone who has ever experimented with magnets under these conditions observes this each and every time. The magnets always accelerate towards one another. They start at a velocity of zero relative to one another and continue to pick up velocity as they approach one another until they meet.

You see, acceleration is defined as a change in velocity. Magnets definitely undergo a change in velocity under these conditions and are in fact gaining velocity constantly on their way towards one another. You can even verify this in slow motion with a video and measuring tape.

The real question is, what is the cause of the acceleration? Is it because some invisible pink unicorns are on either side of the two magnets pushing them together? Did magic cause it? Well, I hope we can agree that notions of this sort are silly.

Therefore, in the absence of other phenomenon the only conceivable entity that could be causing the acceleration of the magnets must be the only thing there accompanying the magnets. That is the magnetic field in between them. There's no other logical conclusion that one can arrive at except to accept that the magnetic field between the two magnets causes the acceleration.

Taking note of this simple observation, it logically follows then that the field between the two magnets must be a field of acceleration otherwise the magnets would never accelerate towards one another like this. In other words, it's not possible to have an acceleration like this without the field being an acceleration in and of itself. Deduction demands this.

Therefore, it follows again that since this field between the two magnets is an acceleration then the unit we use to measure this field must also be a unit of acceleration. This is evidenced by the fact that you can't measure an accelerating field with a unit that isn't an acceleration. Gravity works the same way. It is a field of acceleration and therefore requires units measuring it to be given as an acceleration. This is the whole point of little g in Newton's equation of $g=GM/r^2$. Little g is an acceleration unit. Therefore, it is sound reasoning to conclude that the unit we use to measure this accelerating magnetic field between the two magnets must also be a unit of acceleration just like our little g is.

Now, the unit that we use to measure this magnetic field between those two magnets is the tesla(T). Under the SI system the tesla can be described in many different ways, but the main equivalent I wish to place my finger on is that it is equivalent to N/Am (Newtons per Amp meter). The tesla and N/Am are one and the same. It's just different ways of describing the same unit of measurement. In other words, T=N/Am.

Since the tesla must be a unit of acceleration which we just deduced, then by consequence the unit N/Am is also an acceleration because it is equivalent. Now hold onto to that last thought for just a moment. We'll get right back to it briefly.

Let's look at a famous equation given to us by Sir Isaac Newton which deals with acceleration. The equation is as follows,

F=ma (Force equals mass times acceleration.)

Normally in this equation we are solving for force, but we can also algebraically rearrange this equation to solve for acceleration as so,

a=F/m (Acceleration equals force divided by mass.)

Now force is measured in units we call newtons and mass is measured in the standard unit we call the kilogram. So according to the equation, a=F/m, an acceleration is simply your newtons divided by kilograms or N/kg. In other words, it is correct to say a=N/kg.

Now let's get back to our earlier thought. We saw previously that an acceleration is N/Am or a=N/Am. We also know thanks to Newton that an acceleration is N/kg or a=N/kg.

Therefore, since acceleration equals acceleration (a=a) we can express the following equation N/Am=N/kg. “A” is equal to both N/Am and N/kg. It's not as if there are two different types of acceleration. No, acceleration is acceleration is acceleration is acceleration. Our equation then, N/Am=N/kg is a legitimate expression.

Since the equation, N/Am=N/kg , is mirrored on both sides by the newton and the only thing different is the kg and Am on each side then it becomes clear that kilograms and amp meters must be equivalent units as well. In other words, the expression kg=Am must also hold true as a result of N/Am=N/kg. This is just a matter of simple algebra. Solving that equation for kg leads to that that result.

Now why is it important to note that connection? The reason why is because current thought on gravity is that mass is what is responsible for gravity. This holds true whether you adhere to Newtonian physics or Einstein's relativity. Mass is seen as the culprit for gravity either way. Under Newton mass has the property of attracting other masses. Under relativity it curves space-time which causes gravity. Obviously since the kilogram which is mass equals the amp meter then according to both Newton and Einstein, the amp meter must be responsible for gravity.

Now what exactly is the Am? The amp meter is simply your coulombs per second(C/s) times a meter unit(m). When you multiply C/s times the meter you end up with this expression Cm/s.

Now coulombs are what we use to measure charge and m/s is how we define velocity. In other words, an amp meter is simply the charge times its velocity. The amp meter is therefore a charge moving at a certain velocity. That is exactly what magnetism is. Once you have a moving charge you have a magnetic field. It follows then that magnetism is what is ultimately responsible for mass and therefore gravity since Am=kg.

This is further supported by understanding that one of the principles of General Relativity is that gravity is indistinguishable from acceleration. This is known as the principle of equivalence. Since two magnets accelerate towards one another then according to Einstein the field between them must be equivalent to gravity. Mathematically that would be akin to saying gravity field=magnetic field.

Now I know you're skeptical right now even though all of the above was deduced from sound logical principles, sound math, and sound inferences. Right about now your biggest objection to being confronted with this revolves around the dipole nature of magnetism vs. the monopole nature of gravity. That's completely understandable at this point. However, stay with me for the duration of this paper. I think you may be pleasantly surprised later on.

Now how do we define a new gravity equation from this understanding that magnetism is actually what is at the heart of gravity? The next section of this paper shows the magnetic field equation which is responsible for the gravity we experience here on earth.

The Gravity Equation

The National Institute of Standards and Technology [1] lists the magnetic moments of the three main particles which form matter as follows:

Proton 1.4106067873 x 10^{-26} J/T (or Am^2)

Neutron -0.96623650 x 10^{-26} J/T (or Am^2)

Electron -928.4764620 x 10^{-26} J/T (or Am^2)

Each of these three particles produce a magnetic field in other words. We sometimes call that a beta field. What we wish to know is the total beta field produced by these particles as a result of their magnetic fields over the entire range of their influence. The equation that defines the maximum field as seen in some physics textbooks is as follows.

$$\overrightarrow{\beta_{(z)}} = \frac{\mu_0}{2\pi}\frac{\mu_e}{z^3}\hat{z}$$

Where:

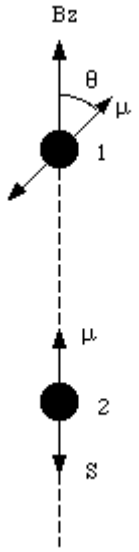
μ_e = the magnetic moment of the particle, in this case an electron,

$\hat{z}$ = 1 , due to the angle being 90^0 that produces the maximum field(some textbooks may leave this out of the equation since 1 times anything is just itself and list the equation without it. But I include it here for ease of understanding later.)

μ_0 = the magnetic permeability of free space.

$\beta_{(z)}$ = the magnetic field measured in tesla's (T)

The above equation gives us the beta field at its maximum value for a 90^0 angle. This illustration describes the situation.



This represents two electrons aligned to give the maximum field from the magnetic moment of the electron where angle θ equals 90^0. That is the angle for unit vector $\hat{z}$ in the above equation that produces the maximum field where $\hat{z}$ is defined to have a value of 1 due to the angle. One of the electrons is exactly 90^0 oriented to the field of the other.

What we wish to know, however, is the value of $\hat{z}$ over all angles so we can get a total field equation. In other words, what if one of the electrons was positioned differently giving a different angle oriented to the field? For example, what if one of the electrons was at the 50^0 angle instead? The initial equation doesn't answer questions like that as it's concerned only with the maximum field.

You see, the first equation only gives us the maximum field value at 90^0 where sine 90^0 equals 1. However, there are minimum fields which occur at 0^0 and 180^0 where sine of 0^0 and 180^0 equals 0. All angles in between remain in the range from 0 to 1. In fact, going from 0^0 to 90^0 our sine value for $\hat{z}$ gradually increases from 0 to 1. This is mirrored for each quadrant of

a full 360^0 arc representing all angles. Each quadrant, 0^0 to 90^0, then 90^0 to 180^0, then 180^0 to 270^0, then 270^0 to 360^0 each range from 0 to 1.

As a result since all four quadrants are just going from 0 to 1, in order to find the value of our $\hat{z}$ for a total field equation of a 360^0 arc rather than the maximum field of the first equation only concerned with the 90^0 angle, we simply add 1 + 0 and divide by 2 for the average of all the angle values for $\hat{z}$ at any given point on the 360^0 arc.

Therefore, $\hat{z}$ has a value of ½ over the full range of angles to cover the angles that an electron could possibly be positioned as in orientation to the field of the other.

Since we now know what $\hat{z}$ is for the total range of angles, our equation can then be rewritten for the total field as follows where we plug in ½ for $\hat{z}$ instead of the 1 used in the first equation which is again only concerned with the maximum field. When we do that our equation changes slightly.

$$\overrightarrow{\beta_{(z)}} = \frac{\mu_0}{2\pi}\frac{\mu_e}{z^3}\frac{1}{2}$$

Here we have just substituted ½ for $\hat{z}$.

Since we are now multiplying the denominator by 2 we simply combine 2π with 2 and simplify the equation to,

$$\beta = \frac{\mu_0}{4\pi}\frac{\mu_e}{z^3}$$

The only difference between this equation and our intial equation is that the maximum field equation is μ_0 divided by 2π whereas the total field equation is μ_0 divided by 4π.

Now μ_0 is defined as $4\pi \times 10^{-7}$ kg m/s^{2}A^2. However, since we are now dividing that constant by 4π the two 4π 's cancel leaving us with just 10^{-7}

or expressed another way, 0.0000001 Kg m/s^{2}A$^{2.}$

(SIDE NOTE: Now just for anyone who may doubt that I formulated the second equation correctly, I point out the evidence that it is the correct formulation by noting that this new constant, $\mu_0 /4\pi$, evenly divides into. Coulomb's constant(k) leading precisely to the speed of light squared. Yes indeed all units precisely cancel leaving us with just that result. Therefore, $\mu_0 /4\pi$ s indeed the correct formulation for the second total field equation.)

Here is the correct equation again with the terms in it defined so no confusion arises as to what you're looking at..

$$\beta = \frac{\mu_0}{4\pi}\frac{\mu_e}{z^3}$$

The terms of this equation are defined as:

$\frac{\mu_0}{4\pi}$ = 0.0000001 Kg m/s^{2}A^2 (the magnetic permeability of free space)

μ_e = Is the magnetic moment of the particle

z = the radial distance in meters

This equation now gives us the total beta field from the magnetic field of a particle over a distance z rather than just the maximum field value of the initial equation.

However, I want to make two more small modifications to this equation which don't affect it in anyways but rather help the equation look more presentable. We will replace μ_e in the equation with μ_{esum}. μ_{esum} is just the total sum of all particles of a particular magnetic moment. In other words, if we're dealing with 10 electrons μ_{esum} would be 10x the electron's magnetic moment. It's the same thing the only difference now is we're taking the total magnetic moment of all particles instead of just one. Also we will replace z with r due to most people using r to denote distance variables in

equations like this. Our equation is the same only now it looks like this due to a variable(z) being replaced with a different letter(r) and the subscript(e to esum) changed in one place for clarity purposes,

$$\beta = \frac{\mu_0}{4\pi}\frac{\mu_{esum}}{r^3}$$

Now what is the importance of our equation here?

I firmly believe this is the true equation for gravity and the equation that will unify the standard model to include gravity. But, we need a little more evidence than just my word. It's one thing to say something like that. It's another thing to prove it! So, let's use the earth as a target body for this equation to see if it is a legitimate gravity equation. The result we get for using the equation in calculation for earth's gravity is our evidence in other words.

In order to do that we need to know how many particles we are dealing with when it comes to earth. You see, our μ_{esum} value in the equation is determined by the total amount of particles times their magnetic moment.

It may initially sound like a daunting task trying to figure out just how many particles there are comprising the earth, but thanks to Jefferson Lab[2] we can get a good estimate on the total amount of particles comprising the earth.

Below is a table from Jefferson Lab that shows the breakdown of the fractional amount of the earth for the most abundant types of atoms. According to their estimate, there are about 1.33×10^{50} atoms in the world and their breakdown in terms of which elements are contributing is as follows:

Element	Fraction of the Earth	Number of atoms
Iron	0.35	2.26×10^{49}
Oxygen	0.30	6.75×10^{49}
Silicon	0.15	1.92×10^{49}
Magnesium	0.13	1.93×10^{49}
Sulfur	0.02	2.24×10^{48}
Calcium	0.01	8.98×10^{47}
Aluminum	0.01	1.33×10^{48}
	SUM	1.33×10^{50}

These are the elements which comprise the majority of earth's mass. The other elements occur in trace amounts and thus will not affect our estimation by any considerable amount. By looking at the periodic table and atomic numbers for these elements we can then estimate the total amount of electrons, protons, and neutrons based on this Jefferson Lab estimate for the number of atoms in the world and the elements responsible for them. When we do that estimate, it turns out that there are about,

1.69909×10^{51} protons, 1.69909×10^{51} electrons, and 1.79082×10^{51} neutrons comprising the earth. Feel free to verify on your own that these are indeed the correct numbers for the particles by cross referencing the above table with the periodic table for these elements.

In fact, other scientific organizations like Fermilab have made similar estimates for the numbers of atoms. The bottom line is that the figures for the numbers of particles comprising the earth are in the correct ball park as there is agreement from both Fermilab and Jefferson lab that these are close to the actual numbers for the atoms. Both estimates put the numbers

of atoms in the world at about the same. I just prefer Jefferson Lab's estimate because it's a bit more detailed. Fermilab's estimate essentially made earth analogous to a huge ball of iron and went from there. Regardless both estimates lead essentially to the same numbers of atoms in the world which in turn would indicate that the amount of particles comprising the earth is on target.

With those figures now for the total number of particles, let's calculate the total magnetic moment for each particle type and sum it all up. This would be the μ_{esum} in our equation.

To find μ_{esum} we simply multiply the total number of each particle type by its magnetic moment and sum the figures from all three particles into one final figure.

(Particle numbers)(magnetic moment)

In the proton's case $\mu_{psum} = (1.69909 \times 10^{51})(1.4106067873 \times 10^{-26}\ J/T)$

or

239674788623355700000000000 J/T from our protons

In the neutron's case $\mu_{nsum} = (1.79082 \times 10^{51})(-0.96623650 \times 10^{-26}\ J/T)$

or

-173035564893000000000000000 J/T from our neutrons

In the electron's case $\mu_{esum} = (1.69909 \times 10^{51})(-928.476\ 4620 \times 10^{-26}\ J/T)$

or

-157756507181958000000000000000 J/T from our electrons

When we add/subtract the sum of the magnetic moments from one another from all three particle types we end up with a remainder summed

magnetic moment skewed heavily in the direction of the electron's magnetic moment due to its much higher value.

Essentially we subtract the proton's magnetic moment contribution (since it's positive) from the electron's(which is negative) and then add the neutron's magnetic moment(since it's negative) to the electron's for the following figure.

23967478862335570000000000 J/T(from the protons)

+

-17303556489300000000000000 J/T (from the neutrons)

+

-15775650718195800000000000000 J/T(from the electrons)

equals

μ_{esum} = -15768986795822764430000000000 J/T

Most of this summed magnetic moment again is due solely to the electron's contribution as the neutrons and protons add or subtract little from it. Hence, that is why I gave it the subscript of μ_{esum}.

So now that we have the sum of the magnetic moments of all the main particles comprising the earth, let's plug it into our total field equation for μ_{esum}.

Our equation again is,

$$\beta = \frac{\mu_0}{4\pi}\frac{\mu_{esum}}{r^3}$$

Where:

r = the radius of the earth which we will cube. Earth's radius is 6371000 m.

$\frac{\mu_0}{4\pi}$ = 0.0000001 Kg m/s^{2}A^2 (the magnetic permeability of free space)

μ_{esum} = -157689867958227644300000000000 J/T

Plugging those numbers into

$$\beta = \frac{\mu_0}{4\pi}\frac{\mu_{esum}}{r^3}$$

leads to,

β=(0.0000001)(-157689867958227644300000000000/6371000^3)

as a result of the calculation,

β= -6.09791T (the negative sign here in front of the result just means it's an attractive field. We can drop it for later calculations)

6.0979T? Wait a moment, isn't the acceleration of gravity at earth's surface roughly 9.8? I thought I said this was a legitimate gravity equation! Well, it looks like it's time for me to pack up my bags and quit wasting your time. But wait a moment first. Was there an error somewhere in the calculation? Yes there was! Something is wrong here but it's not the equation's fault. The equation is correct. We're awfully close here since we learned earlier that a tesla is an acceleration, but we're missing the mark by about 3.7 from gravity's acceleration at the surface of the earth. So what is the problem?

Let's look at $\frac{\mu_0}{4\pi}$ in our equation because that is where the problem lies. We must recognize that this constant of proportionality is for a *vacuum*. It's the magnetic permeability of free space. It's 0.0000001 kg m/s^{2}A^2 in the equation and it's not correct for our purposes here. Why you may ask?

You see, magnetic fields permeate differently through different mediums. Magnetic fields permeate really well through, say, something like iron and less so through, say, something like glass. The value, 0.0000001, is how well a magnetic field permeates through a vacuum.

However, the earth taken as a whole body clearly is not a vacuum and would have a different magnetic permeability than that. We need to account for that in the equation in order to get an accurate result. In other words, 6.0979T is not accurate due to this. That is the figure for a *vacuum* calculation. That is the reason why the calculated result was off in our first calculation.

So what exactly is the earth's magnetic permeability as a whole since the vacuum permeability isn't correct for our purposes here? That may sound difficult to figure out because the earth is composed of a myriad of materials, substances, elements, etc.

If for example, the earth was a huge ball of iron. No problem. We look up the magnetic permeability for iron and plug that into our equation. Or, if the earth was just silicon, we just look up the magnetic permeability of silicon and plug that figure in. But, the earth isn't like that. The earth is a conglomeration of many different materials occurring in differing amounts. So how do we calculate the magnetic permeability of earth as a whole with all those materials? Each of those materials have their own specific magnetic permeability which combines and averages with the other material amounts for a total permeability rating for earth. Sounds difficult right?

Well, getting the answer to the question of "What is the earth's magnetic permeability?" isn't as tedious as one might expect. We have a way of quickly estimating it algebraically based on measurements taken concerning the earth's magnetic field (the other magnetic field thought to be caused by circulating iron at earth's core).

For example, we know that the standard strength of the earth's other magnetic field averaged over the surface is about 0.0000498T[3]. We also know the earth has a magnetic dipole moment of about 8×10^{22} Am^2.

You see, earth's other magnetic field must *permeate* through the earth and produce that tesla reading and that dipole moment. Because of that, with just those two measurements alone we can obtain the earth's magnetic permeability by solving for it with a simple algebra calculation. We can plug 0.0000498T and 8×10^{22} Am^2 into the equation below and solve for the earth's magnetic permeability.

$$\beta = \frac{\mu_E}{4\pi}\frac{\mu_{Ed}}{r^3}$$

Where:

β=0.0000498T

$\frac{\mu_E}{4\pi}$ = the earth's magnetic permeability(which we are solving for)

μ_{Ed} = Earth's dipole moment(8×10^{22} Am^2)

r = the earth's radius(6371000m)

When we plug those figures into the above equation and solve for

$\frac{\mu_E}{4\pi}$

we find that

$\frac{\mu_E}{4\pi}$ = 0.00000016103 kg m/s^2A^2

This is the magnetic permeability of earth as a whole conglomerate substance. As you can see it's a little larger than the vacuum permeability of 0.0000001 kg m/s^2A^2. Yes, indeed the magnetic field will permeate through the earth better than it would a vacuum. So, we're about to get a different result from our previous calculation of gravity.

So, let's try our earlier equation one more time only this time let's use the correct magnetic permeability as it relates to the whole earth rather than the vacuum figure which wasn't correct for this specific instance.

$\beta = \frac{\mu_0}{4\pi}\frac{\mu_{esum}}{r^3}$ would then be expressed as...

$$\beta = \frac{\mu_E}{4\pi}\frac{\mu_{esum}}{r^3}$$

Here we are just replacing with vacuum constant in the initial equation with the earth magnetic permeability constant instead.

Where:

$\frac{\mu_E}{4\pi}$ = 0.00000016103 kg m/s^{2}A^2 (the earth's magnetic permeability)

μ_{esum}=15768986795822764430000000000 J/T (the summed magnetic moments of all particles comprising the earth)

r=6371000m (earth's radius)

When we plug in and do this new computation we end up with

β = 9.82 T !!!

Right on target! That matches the acceleration of gravity on earth's surface. Earth's gravity acceleration at surface is calculated via Newton's equation to be about 9.82. Since we know a tesla is an acceleration from our earlier deductions in the introduction to this paper, then our result matches the acceleration of gravity at earth's surface as calculated via Newton's equation. I think this is firm evidence that I am indeed correct that gravity is coming from magnetism. But, you're not quite convinced yet. You may be thinking I made a mistake somewhere or used wrong figures, or the equation is just wrong. In addition, you've got ***serious*** objections in the way right now preventing you from accepting what was just laid out to you. So let's deal with those problems right now.

The Objections

More or less these objections usually fall into two main categories.

1) The cubed distance in the denominator of the equation. This usually raises red flags over the nature of gravity being an inverse square law.

2) The dipole nature of magnetism (attraction/repulsion) as opposed to the monopole nature of gravity(only attraction). How can gravity be coming from a dipole source? This is by far the biggest objection out there.

It's understandable that these objections will arise. These are fair objections. However, I believe there are legitimate and logical answers to those objections the likes of which are covered here in a moment. But, I need to say a few things before we embark upon these objections.

First of all, you need to know that I ***do not*** "cook" equations. The equation formulations are legitimate. Any mathematician experienced in these magnetic field equations can confirm that these are indeed correct formulations for the magnetic field equations. Anyone who chooses can also check to make sure no fudges have occurred in the usage of values in determining the other data. The values for the magnetic moments of the particles all came from the NIST government website and are accepted values. The Jefferson lab values for the numbers of atoms in the world can even be cross referenced with an estimate made by Fermilab. In other words, the estimate for the amount of particles comprising the earth is on target. The same could be said of both values used to determine the earth's magnetic permeability. Both came from published physics works and are on target based on measurements.

I did not invent any numbers and/or values to force a result upon the community in an effort to hoodwink people. They are cited and in the appendix. I have also checked and rechecked my math to make sure that no errors in computation have occurred. Feel free to do so yourself.

The bottom line is this, 9.82 is being arrived at legitimately. Arriving at the correct figure is just too noncoincidental to just brush off as crackpot or pseudo science as I'm sure most will want to do when hearing that gravity is coming from magnetism. Something is going on here that the scientific community needs to reassess . Furthermore, once you hear me out on the matter, your objections may not be as sound as you think.

I firmly believe this is indeed what the cause of gravity is. The scientific community just needs to understand why now. Let's not put our heads in the sand on this and become dogmatic because of certain preconceived notions that quantum gravity breakthroughs must come from string theory, M-theory, etc. I believe we have the simpler answer here which is in accordance with Occam's Razor while the current approaches to gravity are

just adding complexity upon complexity which violates the spirit of Occam's Razor.

So having spoken my mind, I will deal with the two main objections now.

Number 1

Gravity is an inverse square law. This is one you will usually hear from concerned scientists. So it is a legitimate objection. However, we will find out that it is due to a mistake on the part of science. This objection is mainly due to misinterpretation of evidence as well as a determination purposely or not of some to hide relevant data and/or sweep it under the rug.

In order to get to the heart of this issue I need to point out the problem in understanding first.

For a single source such as an electron, yes, the magnetic field will decay as an inverse cube law. However, with the disposition of multiple sources this can result in a magnetic field which doesn't follow this rule immediately or at least is perceptible right away. The $1/r^3$ rule for magnetic fields arises in the case of being really far away from static (unchanging) magnetic fields. Up close the magnetic field would appear to follow an inverse square law.

This is why all the experiments have seemed to confirm an inverse square law. Gravity of earth for example does look like an inverse square law *up close*. We don't notice it as an inverse cube law until we get a considerable distance away from the earth. Then we see the problem.

Very much related to this is a huge problem science currently has. It is a problem which can't be resolved with the inverse square model at least not legitimately without equation cooking! It involves the Tidal Force. The Tidal Force holds the key to who is right on this.

Rather than bog my paper down with an in depth discussion on the matter, it may be best to let Miles Mathis, who has already taken the scientific community to task on the issue explain what the problem is in depth. I will

of course explain briefly here but this problem needs to be addressed more in depth than my paper allows. So what I will do here is link his paper on the matter that I suggest you read so you can understand this huge eyesore on the physics community at present. They cannot reasonably explain it without resorting to cooking equations and other such nonsense which Mathis points out eloquently. Here is the link to his paper.

http://milesmathis.com/tide.html

And now I will briefly describe the problem.

The Tidal force tapers off by the inverse cube of the distance not the inverse square as you would expect it to if it were coming from gravity. Also, since we know the tides are caused by the moon because they follow the lunar cycle we run into another serious problem. They're supposed to be a result of the gravitational pull of the moon on earth. Even NASA can't help but admit that. If gravity for example is an inverse square law then you can probably see where the problem is if you are at all aware of gravitational equations. You see, the sun not the moon presents a greater gravitational pull on the earth. As a result tides should mainly be a function of the sun not the moon. According to the inverse square law the sun should have an effect on the tides about 190 times that of the moon which would of course make the moon tides appear invisible as they would be dwarfed by the sun's gravity instead. That's what an inverse square law demands but the data doesn't support the law. The moon not the sun indeed does cause the tides and we're left with a major problem.

No one can legitimately explain the problem away. Even Feynman walked away from the problem. The current approach is just to ignore it, cook equations, or resort to illogical attempts at rationalizing the problem away. NASA won't even touch it except to ambiguously say, the moon causes the tides and hope no one really investigates further. It's an embarrassment when the true nature of the problem is logically ascertained.

However, I've got a much simpler solution. How about no equation cooking

as has been done on this issue by the scientific community and how about we reassess gravity as an inverse cube law.

ALL of the problems with the Tidal force disappear that way. The inverse cube law fixes every little issue with Tidal forces and everyone can go home and relax. It explains why the Tidal force decreases by an inverse cube law rather than an inverse square law. If the Tidal force is a result of gravity and it is, then its decay of $1/r^3$ falls right in line with gravity as explained in this paper. An inverse cube law also explains why the moon has a greater effect on the tides than the sun does. By the time the earth feels the sun's gravity it has decreased more due to an inverse cube distance relationship than it would with an inverse square distance. This resolves why the moon which is closer but has considerably less gravity would affect the tides and not the sun.

No more equation cooking. No more irrational attempts at explaining the problem away. Everything becomes right as rain.

The point I'm making here is that I fully believe the evidence supports an inverse cube law for gravity rather than an inverse square law. In fact, when Newton was originally deciding on how to describe the motion of the planets he worked with an inverse cube force in Propositions 43–45 of Book I of his *Philosophiæ Naturalis Principia Mathematica*. He abandoned it unfortunately when he should have kept going.

The Tidal force just throws gasoline on the fire here that was thought to be extinguished long ago.

Number 2

The second objection and perhaps the biggest one involves a miscomprehension of magnetism's dipole nature. Admittedly, I need to take a bit more time on this and include some visual examples so you're not confused because currently scientists are utterly confused here.

Scientists have a hard time rectifying the fact that magnetism is

dipole(attractive/repulsive) whereas gravity appears to be monopole(only attractive). This is by far the best objection and I'm not going to take scientists to task on it because it's a difficult thing to understand at first. However, by the time I'm done here this objection too will fall.

You see, in magnetism there is always a north and south pole according to Gauss Law. Like poles repulse and opposite poles attract. How can monopole gravity be coming from a force that has two reactions opposite but equal to one another? It's a legitimate concern but one for which there is a legitimate answer. So let me get right to the explanation.

It starts with correcting the mistaken belief that 50% of the time magnets repulse and 50% of the time they attract. This belief underpins the entire objection. On the surface this belief would appear to be a valid conclusion. Both poles are exactly opposite but equal to one another so it would seem our conclusion here is based on sound reasoning. But, it is not. Here's why.

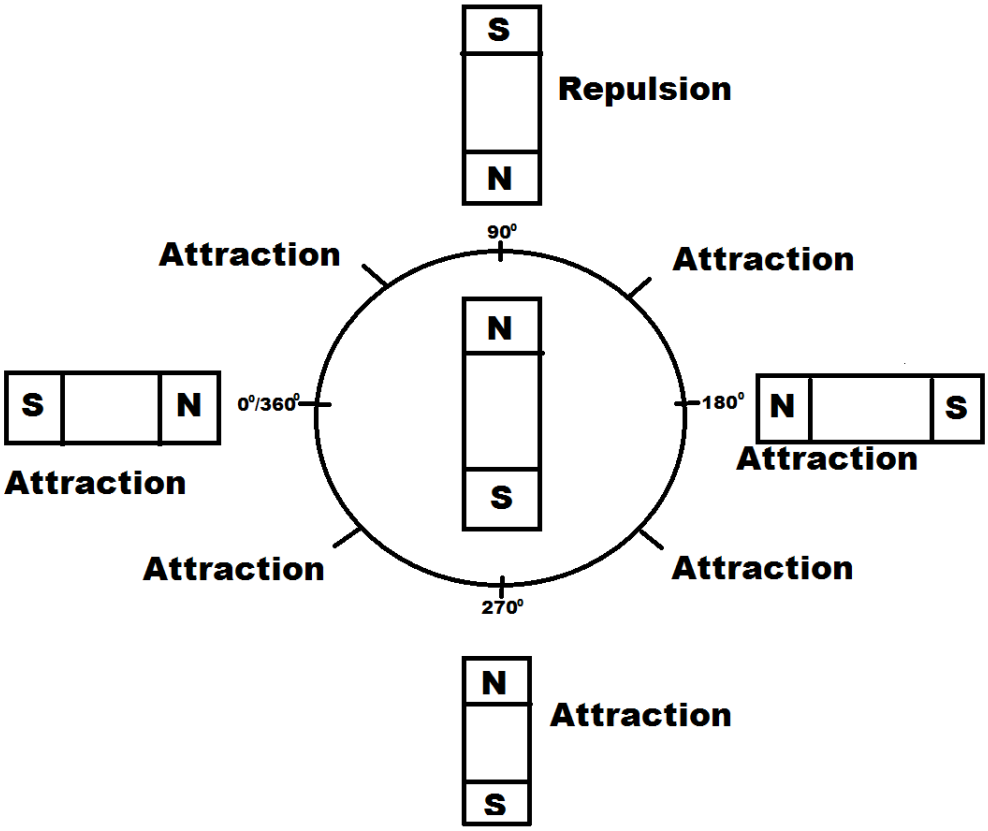
The overall tendency of magnets is that they attract. Repulsion only happens in small area/instance angles. How can this be?

The following understanding should help briefly until I unpack this further.

Magnets never align to repulse on their own! Magnets the majority of situations do align to attract on their own!

You can even confirm this on your own at home with two bar magnets. Try your best to keep two bar magnets from attracting one another. Approach the two magnets from south to south pole or north to north pole and see what happens. Leave one of the magnets free to move while you do this. The magnet will almost always swing around and attract. You will never encounter a situation where the magnet swings around and repulses on its own without being forced into it. In the rare case where they do repulse and don't attract, it's because you've gotten the angle of approach from two like poles just right. If you're off just a hair on the angle of approach (to the left or the right) from two like poles, they immediately ignore the repulsion and attract.

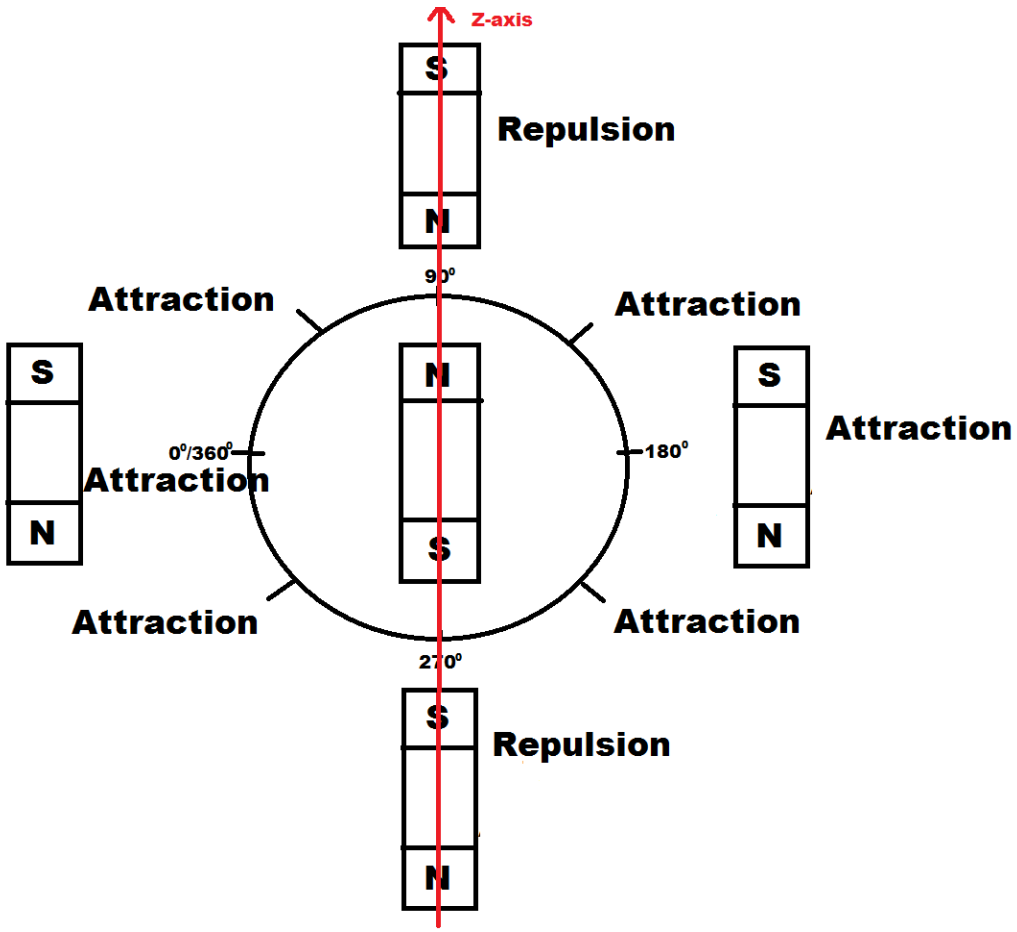
If you're still confused, the below diagrams hopefully will help with your comprehension a bit more. Here we have two bar magnets with an arc of 360^0. Each angle on the 360^0 arc represents an approach vector of the outer magnet vs. the one in the center.



Looking carefully at the diagram you will see that the overall tendency of the angles of approach is attraction. We have a 360^0 arc here in which the majority of angles on that arc result in attraction. Repulsion only happens centered on the 90^0 angle. Obviously if you were to flip the outside magnet around and carry out the same process you would again encounter the same situation in which the majority of angles lead to attraction again. The only difference would be that the repulsion angle would then be at the 270^0 mark. As a result of this there is a greater preponderance of angles leading to attraction as opposed to repulsion. Consequently, it becomes rarer that repulsion takes place in this instance of angle orientation options.

In fact, if you want you could take the above diagram and change the orientation of the outside magnet so that it is performing the arc at a

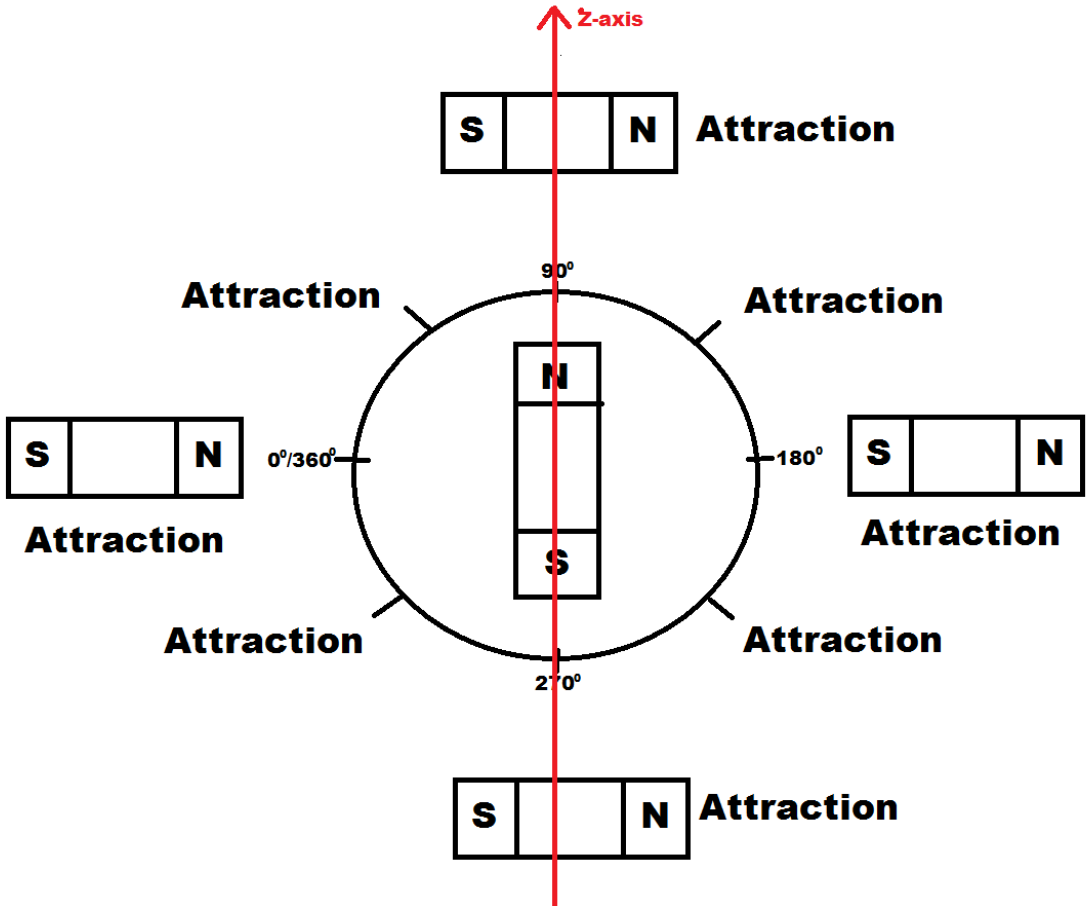
different orientation configuration. What if, for example, you drew a line heading straight up through the magnet in the middle and called that the z-axis? Then you made you the outside magnet orbit the central magnet in a 360^0 arc while it remained parallel constantly to that z-axis? Would that affect anything as far as repulsion vs. attraction in terms of the preponderance of angles?



No, in fact we end up again with the preponderance of angles leading to attraction vs. repulsion. Two angles out of 360 led to repulsion. So once again it is rarer to see repulsion from this particular orientation as well. You may even be suspicious that that 89^0 angle or others similar to it on the arc lead to repulsion. They don't. Moving that outside magnet's south pole closer to the north pole of the central magnet is enough to send the magnets in the center into attraction mode. It takes some visual spatial

skills to see it but it's true. You could even flip that outside magnet(reverse the pole orientation) and come at the arc again with the same process. The result will be the same with only two angles leading to repulsion. Those two angles are now just at 360^0 and 180^0 mark. The majority of angles will favor attraction again.

I could align that magnet to go around that arc in many different configurations. I could perhaps make it so that the outside magnet was perpendicular to that z-axis or any other possibility of the multiple orientations in between like so.



It won't matter though the majority of the angles lead to attraction. There are no repulsion angles from this particular orientation configuration. Flipping the outside magnet won't change that outcome here. I know you may be thinking that that 0^0or 360^0 or 270^0 or 90^0 looks suspicious. You're

probably thinking that since the magnets are splitting the poles equally at those angles that that should lead to a stalemate. It doesn't. Try it at home if you like. The magnet in the center will begin to flip and attract there and everywhere else on the arc.

The point that I'm making with these illustrations is that very few angle orientations lead to repulsion angles from the multitude of angle orientation options whereas the vast majority lead to attraction. Repulsion angles are at small angle windows compared to the attractive angles. We just end up with a process where 99% of the time the angles favor attraction no matter how much we twist and turn that outside magnet.

In other words, the mistaken belief that 50% of the time magnets will repulse is wholly unfounded. No, the majority of the time magnets want to attract. You have to get the angle orientation of two like poles just right in order to see rare repulsion.

Failure to comprehend this phenomenon is what has mainly led scientists to dismiss magnetism as a possible source for gravity. It gets confused in the brain. It's almost as if scientists believe the bottom half of a magnet is all repulsion or that the top half is all attraction when that isn't the case. Magnetism isn't dipole in that sense.

Scientists have wrongly assumed that there is a 50/50 chance of repulsion vs. attraction due to the two poles being opposite but equal and thus concluded that both reactions would counter one another and could not possibly be the cause of gravity. They fail to comprehend the fact that *both* the north and south pole attract at the majority of angles whereas both the north and south pole only repulse at a *few* angles. They fail to understand that when magnets do repel it's because you have two like poles in opposition at the exact right angle. Any degree off and the magnets begin attracting because the majority of angles lead to attraction.

The reality is that magnets attract the majority of the time because they have a higher chance of attraction due to more angles favoring that result.

As a consequence of this the tendency of a magnet is that it *prefers* to only attract. This is why gravity *appears* as a monopole attractive force. However, don't misunderstand. Gravity is actually a dipole force, but due to the way magnets work it *looks* monopole.

Now the electron according to our best techniques in measurement is considered to be an almost perfectly spherical magnet akin to a bar magnet. It is dipole. Due to the geometry that means that you literally need to be exactly oriented/positioned at the right angle of this sphere with like poles to achieve repulsion. Any degree off and we're back to attraction as noted above.

In nature you're just not going to find many electrons oriented to repulse compared to the vast majority of electrons at angles which lead to attraction. This is just simply due to angle percentages. Electrons are literally interspersed throughout matter in a hodgepodge of angle orientations to one another. The overwhelming majority of these orientations are attractive ones as the instances of repulsion angles happen at small angle windows.

This is due once again to the fact that magnets will never align to repulse. You will never see a magnet swing around to repulse regardless of what angle you come at it from with another magnet regardless of what that other magnet's orientation is.

In nature it is a rare case where the angle to repulse is already dead on and in equilibrium which leads to repulsion. Repulsion angles only occur in nature due to the sheer amount of electrons and their multiple orientations to one another. Probability alone states that a small percentage of them will find themselves at the right angles for repulsion, but it is rare compared to the whole and ends up being so negligible that it doesn't affect the overall nature of gravity being an attractive monopole force.

As a result then, that leads to an overwhelming magnetic phenomenon of just attraction. The angles for the electrons in matter resulting in attraction far outweigh the angles for repulsion. Due to this, gravity's overwhelming preference is attraction and is the reason why it appears as an attractive monopole force despite coming from a dipole source. Electrons tend to magnetically attract everything roughly 99% of the time while only repulsing at a rate of less than 1% due to repulsive and attractive angle percentages. There are literally 129,600 (360 x 360)whole number angle orientations that electrons could be positioned relative to one another. Of

those only a very small percentage of them are repulsive angles. As a result, electron magnetic fields become additive with one another and lead to what we observe as a monopole gravity field because of this.

Hopefully now you understand the monopole nature of gravity. It's not actually monopole but appears that way. Nikola Tesla was right when he said gravity was coming from magnetism. Scientists just got confused over the nature of magnetism and mistakenly dismissed the claim. How fitting that his name is now synonymous with the unit of measurement for the magnetic field.

Having answered the biggest objection, let's now deal with the gravitational constant.

The Gravitational Constant

The very nature that gravity is a magnetic function should mean that the gravitational constant can also be expressed in magnetic units. Is this possible?

What I will attempt to demonstrate here is the gravitational constant as it relates to magnetism. The gravitational constant is normally expressed with units of meters, kilograms, and seconds. However, since I am saying that gravity is a magnetic function, we need to see the gravitational constant expressed in magnetic units.

How does one do that? Again, the problem isn't that difficult.

Let's start with what we've learned.

1)We know that the equation I formulated gives an equivalent result for gravity expressed as a magnetic function. 2)Knowing this equation is equivalent to a Newtonian calculation for the acceleration of gravity for earth we simply set Newton's equation equal to mine and solve for G in the instance of earth.

Newton's equation for the acceleration of gravity is,

$$g = G\frac{M}{r^2}$$

Setting Newton's equation equal to mine leads to this equation,

$$G\frac{M}{r^2}=\frac{\mu_E}{4\pi}\frac{\mu_{esum}}{r^3}$$

The gravitational constant can then be solved for algebraically giving us its value in terms of magnetic units. Now let's define the terms for this equation.

G=6.674 x 10^{-11} $m^3/kg\ s^2$ (the gravitational constant)

M=The earth's mass(5.972 x 10^{24}kg)

r=The earth's radius(6.371 x 10^6m)

$\frac{\mu_E}{4\pi}$ =0.00000016103 kg m/s^2A^2(the magnetic permeability of earth as a whole substance)

μ_{esum} = -1576898679582276443000000000 J/T or Am^2 (the combined magnetic moment sum of all particles comprising the earth)

Now let's plug those values into the above equation and solve for G on the left side.

$$6.674x10^{-11}m^3kg^{-1}s^{-2}\frac{5.972x10^{24}kg}{(6.371x10^6m)^2}=0.00000016103kg^1m^1s^{-2}A^{-2}\frac{1576898679582276443000000000Am^2}{(6.371x10^6m)^3}$$

Isolating and solving for G can get a bit messy but here is the start.

$$\frac{6.674x10^{-11}m^3}{kgs^2}\frac{\cancel{5.972x10^{24}kg}}{\cancel{(6.371x10^6m)^2}}\frac{\cancel{(6.371x10^6m)^2}}{\cancel{5.972x10^{24}kg}}=\frac{0.00000016103\cancel{kg}m}{A^2s^2}\frac{1576898679582276443000000000Am^2}{(6.371x10^6\cancel{m})^3}\frac{(6.371x10^6\cancel{m})^2}{5.972x10^{24}\cancel{kg}}$$

I'm not going to go through every step here in the algebraic simplification. Just know that when you simplify and solve for G on the left side of this

equation all units cancel and the result reduces down to the following. Feel free to check my work here to verify for yourself that I am telling you the truth.

$6.674 \times 10^{-11}\ m^3\ kg^{-1}\ s^{-2} = 6.674 \times 10^{-11}\ m^2\ A\ s^{-2}$

or

$G = 6.674 \times 10^{-11}\ m^2/As^2$

When one looks at units expressed that way, one might come to the conclusion that they know of no magnetic units expressed in such a manner. It's not until one realizes that webers are expressed as $kg \cdot m^2/As^2$ that one sees what is being shown. The result is telling us that $6.674 \times 10^{-11}\ m^2/As^2$ is the same as the amount of webers you have per kilogram. The two kilogram units in the numerator and denominator cancel leaving us with just the m^2/As^2 that we see.

The gravitational constant expressed in magnetic units is 6.674×10^{-11} Wb/Kg (webers per kilogram). Webers are the SI unit of magnetic flux. In other words, the amount of magnetic flux you have per mass is what the gravitational constant means when it comes to magnetism.

Now as it turns out one can also do something else with this result. One can solve for units as well. The result again...

$6.674 \times 10^{-11}\ m^3/kg\ s^2 = 6.674 \times 10^{-11}\ m^2/C\ s$

(I'm just writing As^2 as Cs here so you can see the cancellations better. Both are equivalent)

Let's solve here for kilograms.

$$\frac{\cancel{6.674x10^{-11}m^3}}{\cancel{kgs^2}}\ \frac{\cancel{kgs^2}}{\cancel{6.674x10^{-11}m^3}} = \frac{\cancel{6.674x10^{-11}}\,m^2}{Cs}\ \frac{kgs^2}{\cancel{6.674x10^{-11}}\,m^3}$$

further simplifying...

$$1 = \frac{kgs}{Cm}$$

Now solving for the kg...

$$kgs = Cm$$

which is...

$$kg = \frac{Cm}{s}$$

Since Cm/s is just another way of expressing the Amp meter one can see once again that kg=Am which is just further evidence that what was revealed in the introduction of this paper is indeed sound.

Conclusion

In conclusion I believe gravity is a result of the magnetic fields of the particles comprising mass, mainly the electron. The equation formulated for gravity based on this understanding agrees with the gravitational figure for earth. Objections to this understanding are then legitimately addressed explaining how the inverse square law doesn't fit observed data, and how magnetism overwhelmingly appears monopole. As a result of this, the gravitational constant can also be expressed in magnetic units and mass is shown to be equivalent to the Amp meter. This only further substantiates what was revealed in the introduction of the paper. Therefore, I conclude that gravity is indeed simply a magnetic function.

Appendix

1 - The National Institute of Standards and Technology website where these values are located is found here:

http://physics.nist.gov/cuu/Constants/

2 - Jefferson Lab's work can be accessed here:

http://education.jlab.org/qa/mathatom_05.html

Author:Drew Weisenberger

Their work can be cross referenced against Fermilab's estimate found here:

http://www.fnal.gov/pub/science/inquiring/questions/atoms.html

Author:Dr FermiGuy

3 – “Magnetic Field on Earth – The Physics Factbook”

http://hypertextbook.com/facts/1999/DanielleCaruso.shtml

Editor: Glenn Elert

(here is where the figure for the tesla reading on earth's surface comes from. The dipole moment of earth is found in numerous places.)