

Gravity as 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 moments of the particles associated with matter (protons, neutrons, and electrons). Their magnetic moments, particularly the one of the electron since it is much larger than the other two gives a value when plugged into the proper magnetic equation that coincides with the acceleration of gravity at Earth's surface. Also within the course of this paper I will demonstrate the meaning of the gravitational constant as it relates to electromagnetic 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 BUT 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 because they start at speed of zero relative to one another so acceleration is taking place before they meet and we can easily see magnets under these circumstances gain speed 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).

Obviously d is the only correct answer here. 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

speed.

The real question is why do the magnets accelerate towards one another like this? Is it because some invisible pink unicorns are on either side of the two magnets pushing them together? Did magic cause it? Well, I think we all know that both of those notions are silly.

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 and 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. What else would you ascribe the acceleration to?

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.

The unit that we use to measure this magnetic field 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 is a unit of acceleration which we deduced earlier, then by consequence the unit N/Am is also an acceleration. Now hold onto to that last deduction 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.

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

Therefore, since acceleration equals acceleration we can express the following equation $N/Am=N/kg$.

Now some may be thinking that you cannot set up an equation like that where $a=a$ and hence, $N/Am=N/Kg$, because they may be confusing degree of acceleration with acceleration. Let me explain what I mean. Let's say you have 1 kilogram of mass as well as a 9 kilogram mass. The fact that there are two different degrees of mass doesn't change the fact that mass is still mass. Only the amount changes. By the same token, just because there are degrees of acceleration doesn't change the fact that acceleration is still acceleration. Therefore, our equation $N/Am=N/kg$ is a legitimate expression because acceleration=acceleration just like mass=mass.

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. 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.

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. Obviously since I am saying that $\text{Kg}=\text{Am}$ then something else is also responsible for gravity, namely, the Am.

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 that is equivalent to gravity.

Now what exactly is the Am? The Amp meter is simply your coulombs per second or C/s times a meter unit. 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 $\text{Am}=\text{kg}$.

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 $1.4106067873 \times 10^{-26} \text{J/T}$ (or Am^2)

Neutron $-0.96623650 \times 10^{-26} \text{J/T}$ (or Am^2)

Electron $-928.4764620 \times 10^{-26} \text{J/T}$ (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 moment over the entire range of their influence. The equation that defines the maximum field is as follows.

$$\overline{\beta}_{(z)} = \frac{\mu_0}{2\pi} \frac{\mu_e}{z^3} \hat{z}$$

Where:

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

$\hat{z} = 1$, due to the angle being 90° 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° angle. This illustration describes the process.



This represents two electrons aligned to give the maximum field strength from the magnetic moment of the electron where angle θ equals 90° . That is the angle for \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° 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?

The first equation only gives us the maximum field value at 90° where sine 90° equals 1. However, there are minimum fields which occur at 0° and 180° where sine of 0° and 180° equals 0. All angles in between remain in the range from 1 to 0.

In order to find the value of

\hat{z} for a total field equation rather than the maximum field of the first equation, we simply add $1 + 0$ and divide by 2 for the average.

Therefore, \hat{z} has a value of $\frac{1}{2}$ over the full range of angles to cover all of 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 $\frac{1}{2}$ for \hat{z} instead of the 1 used in the first equation as seen in textbooks.

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

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

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

Now μ_0 is normally defined as $4\pi \times 10^{-7}$. However, since we are dividing that constant by 4π the two 4π 's cancel leaving us with just 10^{-7} or 0.0000001 Kg m/s²A². (also for an interesting side note while we're here, did you know

if you divide Coulomb's constant by $\frac{\mu_0}{4\pi}$ you end up with the speed of light squared? Just some food for thought for those who may be wondering if $\frac{\mu_0}{4\pi}$ is correct.)

Carrying on.

The terms of this equation are defined as:

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

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 torque value of the initial equation.

However, I want to make two more small modifications to this equation. 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 being replaced with a different letter and the subscript changed in one place for clarity purposes,

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

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. So, let's use the earth as a target body for this equation to see if it is a legitimate gravity equation.

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 have 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. 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.

In fact other scientific organizations like Fermilab have made similar estimates. The bottomline 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. Both estimates put the numbers of atoms in the world at about the same. I just prefer Jefferson Lab's estimate because I think it's a bit more precise. 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 for the particles comprising the earth.

With those figures now for the total numbers 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 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 $\mu_{psum} = (1.69909 \times 10^{51})(1.4106067873 \times 10^{-26} \text{ J/T})$

or

23967478862335570000000000 J/T from our protons

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

or

-17303556489300000000000000 J/T from our neutrons

In the electron's case $\mu_{esum} = (1.69909 \times 10^{51})(-928.4764620 \times 10^{-26} \text{ J/T})$

or

-15775650718195800000000000000 J/T from our electrons

When we add/subtract the sum of the magnetic moments from one another from all three particles 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 from the electron's and then add the neutron's magnetic moment 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

$$\mu_{\text{esum}} = -15768986795822764430000000000 \text{ J/T}$$

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,

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

Where:

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

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

$$\mu_{\text{esum}} = -15768986795822764430000000000 \text{ J/T}$$

Plugging those numbers into

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

leads to,

$$\beta = (0.0000001)(-15768986795822764430000000000/6371000^3)$$

as a result of the calculation,

$\beta = -6.09791T$ (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 this was a legitimate gravity equation. Something is wrong. We're 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. Why?

$$\underline{\mu_0}$$

Let's look at 4π 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/s²A² in the equation and it's not correct for our purposes here. Why you may ask?

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

However, the earth taken as a whole substance 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.

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 that 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 having its own specific permeability which combines and averages with the other materials amounts for the total

permeability for earth?

Getting the answer to that question isn't as tedious as one might expect. We have a way of estimating it algebraically based on measurements taken concerning the earth's magnetic field (the other magnetic field caused by circulating iron at earth's core).

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

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 $8 \times 10^{22} \text{ Am}^2$ into this equation and solve for the earth's magnetic permeability.

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

Where:

$$\beta = 0.0000498 \text{ T}$$

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

μ_{Ed} = Earth's dipole moment ($8 \times 10^{22} \text{ Am}^2$)

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

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

This is the magnetic permeability of earth as a conglomerate substance. As you can see it's a little larger than the vacuum permeability of $0.0000001 \text{ kg m/s}^2\text{A}^2$. 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.

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

would then be expressed as...

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

Here we are just replacing with vacuum figure in the initial equation with the earth's permeability instead.

Where:

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

$\mu_{esum} = 15768986795822764430000000000 \text{ J/T}$ (the summed magnetic moments of all particles comprising the earth)

$r = 6371000 \text{ m}$ (earth's radius)

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

$$\beta = 9.82 \text{ T}$$

Right on the money! 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 and we know observationally that this is consistent with measurement. Since we know a tesla is an acceleration from our earlier deductions, then our result matches the acceleration of gravity at earth's surface as calculated via Newton's equation and direct measurements.

As a result of this, I am submitting to you that gravity is a result of the magnetic fields coming from the particles that comprise the mass, mainly the electron's. I believe arriving at the correct gravitational figure for earth is solid evidence that gravity is indeed coming from magnetism.

Now I understand people have objections to this. More or less these objections usually deal fall into three main categories. One is the di-pole nature of magnetism. How can gravity appear mono-pole(only attractive) when we know that magnetism is a di-pole force according to Gauss Law and is both attractive and repulsive? Or , two, the mistaken belief that only metals respond to magnetism. Or, three, they may notice the cubed distance in the denominator in the equation and immediately raise red flags over the nature of gravity being an inverse square law. It's understandable that these will arise. These are legitimate objections. However, I believe there are legitimate and logical answers to those objections the likes of which are outside the scope of this paper, but which I believe I have sound answers for.

The bottomline is that I *do not* “cook” equations. The equation formulations are legitimate. Any mathematician can confirm that these are indeed correct formulations for the magnetic field equations. You may even check to see that the intial equation I began with for the maximum field is also correct and in physics textbooks. Anyone who chooses can also check to make sure no fudges have occurred in the usage of values in determing 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 and accepted physics works. I did not invent any numbers and/or values to force a result upon the community in an effort to hoodwink people. All are cited in the appendix. I have also checked and rechecked my math to make sure that no errors in calculation have occurred. Feel free to do so yourself.

The bottomline is this, 9.82 is being arrived at legitimately. Arriving at the correct figure is just too uncoincidental 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 .

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. Please consider carefully the results, the figures, and the equations. We may be on the verge of cracking the little quantum gravity mystery here. It would be a shame if I am correct and no one listens due to preconceived biases from objections that have legitimate answers which science has yet to fully grasp.

The Gravitational Constant

The very nature that I'm postulating that gravity is an electromagnetic function should mean that the gravitational constant can also be expressed in electromagnetic units. Is this possible?

What I will attempt to demonstrate here is the gravitational constant as it relates to electromagnetism. The gravitational constant is normally expressed with units of meters, kilograms, and seconds. However, since I am postulating that gravity is a magnetic function, we need to see the gravitational constant expressed in electromagnetic 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. 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 electromagnetic units. Now let's define the terms for this equation.

G=6.674 x 10⁻¹¹ m³/kg s² (the gravitational constant)

M=The earth's mass(5.972 x 10²⁴kg)

r=The earth's radius(6.371 x 10⁶m)

$\frac{\mu_E}{4\pi}$ =0.00000016103 kg m/s²A²(the magnetic permeability of earth as a whole substance)

μ_{esum} = -15768986795822764430000000000 J/T or Am² (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.

$$6.674 \times 10^{-11} \frac{m^3 kg^{-1} s^{-2}}{(6.371 \times 10^6 m)^2} = 0.00000016103 \frac{kg^1 m^1 s^{-2} A^{-2}}{(6.371 \times 10^6 m)^3} \frac{15768986795822764430000000000 Am^2}{(6.371 \times 10^6 m)^3}$$

Which is then,

$$\frac{6.674 \times 10^{-11} m^3}{kg s^2} \frac{5.972 \times 10^{24} kg}{(6.371 \times 10^6 m)^2} = \frac{0.00000016103 kg m^1 s^{-2} A^{-2}}{A^2 s^2} \frac{15768986795822764430000000000 Am^2}{(6.371 \times 10^6 m)^3} \frac{(6.371 \times 10^6 m)^2}{5.972 \times 10^{24} kg}$$

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 you end with the following result. Feel free to check my work here as well.

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

or

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

When one looks at units expressed that way, one might come to the conclusion that they know of no electromagnetic units expressed in such a manner. It's not until one realizes that webers are expressed as $\text{kg}\cdot\text{m}^2/\text{As}^2$ that one sees what is being shown. The result is telling us that $6.674 \times 10^{-11} \text{ m}^2/\text{As}^2$ 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 electromagnetic units is simply $6.674 \times 10^{-11} \text{ Wb/Kg}$ or 6.674×10^{-11} webers per kilogram. Webers are the SI unit of magnetic flux.

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

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

Let's solve here for kilograms.

$$\frac{\cancel{6.674 \times 10^{-11} \text{ m}^3}}{\cancel{\text{kg s}^2}} \cdot \frac{\cancel{\text{kg s}^2}}{\cancel{6.674 \times 10^{-11} \text{ m}^3}} = \frac{6.674 \times 10^{-11} \text{ m}^2}{\text{C s}} \cdot \frac{\text{kg s}^2}{\cancel{6.674 \times 10^{-11} \text{ m}^3}}$$

further simplifying...

$$1 = \frac{\text{kg s}}{\text{C m}}$$

Now solving for the kg...

$$kgs = Cm$$

which is...

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

Since Cm/s is the Amp meter one can see once again that kg=Am which is just a further affirmation that what was revealed at the beginning 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. As a result of this, the gravitational constant can also be expressed in electromagnetic units and mass is shown to be equivalent to the Amp meter in more ways than one.

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

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)