Re: Anti−gravitational effects demonstrated using a Van De Graaf generator

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* *From*: Mitchell Jones <mjones@xxxxxxxxxxxxxx>
* *Date*: Tue, 06 Feb 2007 13:33:03 −0600

In article <1170745219.820301.244910@xxxxxxxxxxxxxxxxxxxxxxxxxxxx>,
franklinhu@xxxxxxxxx wrote:

> On Feb 5, 6:06 pm, Mitchell Jones <mjo...@xxxxxxxxxxxxxx> wrote:
>
> > In article <epr12a$c2...@xxxxxxxxxxxxxxxxxxx>,
> >
> > carlip−nos...@xxxxxxxxxxxxxxxxxx wrote:
> >
> > > frankli...@xxxxxxxxx wrote:
> > >
> > > [...]
> > >
> > > > I was looking for something like "Why
> > > > gravity can't be the
> > > > electrostatic force", but I find almost nothing
> > > > in the literature
> > > > or the web.
> > >
> > > The simplest reason is this: in gravity, all masses attract,
> > > while
> > > in electrostatics, like charges repel.
> > >
> > > For example, the Earth ands the Moon attract, so in an
> > > electrostatic
> > > model, they must have opposite charges.
> >
> > ***{That's seems rather too strong, don't you think? In the particular
> > electrostatic model you are discussing, they do, in fact, have opposite
> > charges; but if you intend to claim that must be so in all possible

electrostatic models of gravity, then I must disagree. For example, suppose that the attraction between unlike charges is greater than the repulsion between like charges, in the very slight amount necessary to account for the observed strength of gravity. In such an electrostatic model, the Earth and Luna (the Moon) attract electrostatically with gravitational force, yet have the same charges−−to wit: essentially zero.

Let me elaborate a bit.

According to Coulomb's law, the magnitude of the electrostatic force is equal to a constant of proportionality times the product of the charges, divided by the square of the distance between their centers.

By such a rule, the electrostatic force between Earth and Luna would have four components:

(1) If K is the Coulomb constant, e1 is the charge of the electrons in the Earth, e2 is the charge of the electrons in Luna, and r is the distance from the center of the Earth to the center of Luna, we have:

$F1 = Ke1e2/r^2$

(2) If p1 is the charge of the protons in the Earth and p2 is the charge of the protons in Luna, we have:

$F2 = Kp1p2/r^2$

(3) If k is the ratio, slightly greater than 1, of the absolute magnitude of the attraction between like charges to that of the repulsion between unlike charges, then we have:

$F3 = Kke1p2/r^2$

(4) And, similarly, we have:

$F4 = Kke2p1/r^2$

Therefore the force of gravity, Fg, would be such that

$Fg = F1 + F2 + F3 + F4$

$Fg = Ke1e2/r^2 + Kp1p2/r^2 + Kke1p2/r^2 + Kke2p1/r^2$

If M is the mass of Earth, m is the mass of Luna, and <e> is the mass of the electron, then:

$e1 = -(M/1836)/<e> = -M/1836<e>$

$p1 = -e1 = M/1836<e>$

e2 = −(m/1836)/<e> = −m/1836<e>

p2 = −e2 = m/1836<e>

Substitution into the last force equation, above, gives:

Fg = K(−M/1836<e>)(−m/1836<e>)/r^2

+ K(M/1836<e>)(m/1836<e>)/r^2

+ Kk(−M/1836<e>)(m/1836<e>)/r^2

+ Kk(−m/1836<e>)(M/1836<e>)/r^2

= [2K/(1836<e>)^2][Mm/r^2] − k[2K/(1836<e>)^2][Mm/r^2]

= [2K/(1836<e>)^2][1 − k][Mm/r^2]

For simplicity, let z = 1 − k, so that the above becomes

Fg = [2zK/(1836<e>)^2][Mm/r^2]

By Newton's law of gravitation we have

Fg = GMm/r^2

And so we conclude that

G = [2zK/(1836<e>)^2]

Of course, 1836<e> = <p>, the mass of the proton, in the notation I'm using, so we obtain

G = 2zK/<p>^2

In SI units, G = 6.6742x10^−11 Nm^2/kg^2, K = 8.988x10^9 Nm^2/C^2, and
<e> = 9.109x10^−31 kg. Hence <p> = (1836)(9.109x10^−31) = 1.672x10^−27.
Since in this problem we want to distinguish between attractive and repulsive forces, and since the attractive ones traditionally get a negative sign, I'm going to treat the value of G as a negative number when I plug it in below. (Mass and radius are clearly positive, so G is the only palusible way to enforce that distinction.) And so we have:

z = (−6.6742x10^−11)/{2(8.988x10^9)/[(1.672x10^−27)]^2}

z = −1.038x10^−74

What the above argument accomplishes, hopefully, is to demonstrate the theoretical possibility that gravity is electromagnetic in nature, and arises out of Coulomb's law. That's not to say that it would be convenient to do gravitational calculations that way, of course. Such a demonstration would be useful in the same sense that it is useful to note that the relativistic kinetic energy formula, Ek = m0[1/(1 − v^2/c^2)^.5 −1]c^2, could in principle be used to calculate the kinetic energy involved in ordinary automobile collisions, despite the practical inconvenience of doing so. The idea is to reveal a possible connectedness that would in most circumstances remain hidden from view.

There are lots of counterarguments that can be directed at the above idea, of course−−so many, in fact, that I don't offer it as a necessary truth, but merely as something worthy of consideration. I have been thinking along these lines off and on for a long time, and there is another theory of gravitation that I feel has more explanatory power than this one, even though the issue between them is not settled by any means.

What would be the point of trying to unify electromagnetics and gravitation, after all? :−)

Any errors in the above are of course mine, but the credit for the basic idea, for what it's worth, goes to Prof. Thomas Barnes. (See his book, Space Medium: the key to unified physics, published in 1986.)

−−Mitchell Jones}***

The Earth and the Sun
attract, so they, too, must have opposite charges. But that
would
make the charge of the Moon the same sign as the charge of
the Sun,
so they would repel. This does not happen −− the Moon's
orbit
very clearly shows that it is attracted by both the Earth and
the
Sun.

(Or for a more dramatic example, what "charge" would you
ascribe to
the Apollo 11 lunar lander? It was attracted to the Earth −−
they
didn't have to scrape it off the ceiling during assembly −− so
it
must have had the opposite charge from the Earth. But the

Moon is
also attracted to the Earth, and must also have the opposite
charge
from the Earth. Why, then, wasn't the lunar lander repelled
from
the Moon?)

Steve Carlip

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If I seem to be ignoring you, consider the possibility
that you are in my killfile. −−MJ− Hide quoted text −

− Show quoted text −

Excellent work!

To restate what you are saying − the only thing you really need to have a electrostatic based gravity is a tiny difference in strength between the attraction of like opposite charges versus the repulsion of similar charges. (I think you had this worded backwards in your post

{That's the sort of thing that could easily happen. I don't spend a lot of time editing before I post, since this is, to put it mildly, an informal group. However, when I glanced back over the material, I didn't notice any instance of the sort you described. −−MJ}

). If the ratio is something like k = .038x10^−74, we can account for the gravitational constant found in the formula Fg = GMm/r^2 which in turn accounts for the Newtonian Orbit equation of v^2R =GM. That ratio is exceedingly small and we have done experiments to determine this type of ratio − is this below our current threshold of sensitivity?

***{It's not really an experimental thing, once the other constants (G and K) have been determined. All that is required is the basic idea−−to wit: that the attraction of unlike charges may slightly exceed the repulsion of like charges. If it does, then a calculation along the lines that I attempted in my post will reveal the value of z, which I would call the unification constant. Thomas Barnes, as I noted, is the first person, to my knowledge, who recognized the possibility that the attractive force might slightly exceed the repulsive one. The book in which he mentioned that idea, however, was perceived to have other problems−−i.e., he was an aether theorist−−and so his book "fell deadborn from the press," as they used to say.

That happened because while all modern physicists admit that a medium exists which pervades all of space, few are aware that was all the term "aether" ever meant, back in the days when it was in general usage. Of those who are aware, the honest ones are like Barnes: they still use the term today; and the dishonest ones rail at them, because they resent the fact that they refuse to conform.

Why are they resented? Because physics is like a fraternity in that it has initiation rites, and the purpose of the rites is exactly the same in both cases: you have to prove that fitting in is more important to you than the truth, in order to get in. To get into a fraternity you might, for example, have to risk choking to death or becoming infested with some horrible parasite by swallowing a pound of raw liver. And in physics you will, in fact, have to swallow the nonexistence of the aether, the relativity of simultaneity, things that magically pop into and out of existence, and a lengthy parade of other ridiculous nonsense, in order to fit in. The idea, in both cases, is for you to demonstrate that you will do as you are told, that you will go along in order to get along−−which means: that you will take your cues from on high, and support the goals of those in authority, as defined by the dominant culture (even if those ideas will lead inexorably to the destruction of your country and the enslavement of mankind, as, in fact, they will).

As far as the mathematical derivation that I posted, that was mine, including any mistakes it may have contained. It has been 20 years since I looked at Barnes' book, but I have no recollection of anything like that being there. (Looking on Amazon.com, I see that several copies of Barnes' book are currently available, if anyone would care to check me on this.)

I disagreed with him in lots of places, by the way. The main thing I considered memorable about the book was his notion that the attractive Coulomb force might be slightly stronger than the repulsive one. Don't take my reference as an endorsement of all of his opinions.

−−Mitchell Jones}***

> So we can keep the 1/r^2 force relationship rather than thinking it may be a force like dielectorphoresis which seems rather problematic. I am willing to accept any reasonable hypothesis that allows the gravitational force to be composed of electrostatic forces.
>
> So what to the nay sayers of gravity=electrostatic have to say now? You cannot so easily toss this idea into the trash bin without some real analysis. The difference in the force strength was the only counter argument presented, and now even this can be explained. You are tossing out the gravity=electrostatic possibility just like people

> use to throw out the possibility that the Earth wasn't flat. By looking around, it is obvious that the Earth is flat. Don't fall for the obvious explanations without examining the alternatives.

{You seem to be implying, in the above, that the original idea you posted wasn't wrong. But, of course, it was. Steve Carlip's post dissected your idea quite convincingly, and nothing in what I said was intended to dispute that. I merely thought that he had stated his argument in too general a form, that's all. −−MJ}

> I think that the simplification and unification of the forces that you would get with a gravity=electrostatic force pictures is so appealling, that I think it has just got to be true.

{It is a very powerful idea, but there are other theories of gravity that have more explanatory power. The simplest theory that explains a set of facts trumps more complex theories that explain the same facts, but it does not necessarily trump more complex theories that explain more facts. Thus in my mind this is a tough question, and still not completely decided. −−MJ}

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