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Experimental procedure to discriminate between pull gravity &

EMRP Push Gravity Theory

(Includes full replication details + link to video)

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The aim of this experiment is to create a direct conflict between EMRP push gravity, and Newton's pull gravity. '*What is gravity'* is the question that has intrigued many scientists and philosophers alike [2], but for lack of any experimental evidence has never been satisfactorily answered. All we presently find in mainstream physics is no more than an absurd hypothesis of a pull type gravity innate within all matter, which surprisingly enough, is a concept specifically denied by Newton himself to whom the concept is most often erroneously ascribed. For we find that about fourteen years after his culminating work in gravity, this topic is addressed by Newton in four letters he sent to Doctor Bentley. In his second letter, dated January 17, 1692-3, he says in reply to one from Bentley: *You sometimes speak of gravity as essential and inherent to matter*. ***Pray do not ascribe that notion to me****, for the cause of gravity is what I do not pretend to know, and therefore would take more time to consider of it.* In his third letter, dated February 25,1692-3, he expresses himself somewhat less guardedly : *It is inconceivable that inanimate brute matter should, without the mediation of something else which is not material, operate upon and affect other matter, without mutual contact, as it must do if gravitation in the sense of Epicurus be essential and inherent in it. And this is one reason why* ***I desired you would not ascribe 'innate gravity' to me.*** *That gravity should be innate, inherent, and essential to matter, so that one body may act upon another at a distance, through a vacuum, without the mediation of anything else, by and through which their action and force may be conveyed from one to another, is to me so great an absurdity, that I believe no man who has in philosophical matters a competent faculty of thinking can ever fall into it.*

Gravity must be caused by an agent acting constantly according to certain laws; but whether this agent be material or immaterial, I have left to the consideration of my readers. And again, in the conclusion of the third book of his Principia, Newton remarks: *Hitherto I have not been able to discover the cause of those properties of gravity from phenomena, and I frame no hypothesis; for whatever is not deduced from the phenomena is to be called an hypothesis...*As soon as one frees himself from the innate force concept, it becomes obvious that the most obvious way for an external agent to move two bodies towards each other is for it to PUSH them towards each other. EMRP defines this agent simply as the Poynting vector of highly energetic ultra cosmic radiation, thus finally unifying gravity with electromagnetism using a simple concept.

Following my arguments mentioned in the EMRP theory [3] section one can immediately spot a difference in the behaviour of the dynamic centre of gravity between the two theories. This experiment is easy, cheap, and reproducible and should give results of magnitude well beyond any margin of error, perhaps obvious to the bare eye. Most importantly, both polarity and magnitude of the effect are only predicted by EMRP. For those who do not follow the activities in our Yahoo group, or my maths on the EMRP gravity section, this is a description of the experiment in layman terms. We are going to setup an elongated metal body (equivalent to a long rod) having a cross section of a long bar, to rotate freely on low friction bearings about its centre of mass. This body is balanced with small external weights in the same manner one balances his car's tires by attaching such weights on its rim. In a uniform gravity field, when perfectly balanced, the object should stay still at any arbitrary initial position....but there is no place on the surface of the earth where one can find a uniform gravity field.

Under Newton's pull concept, the gravity field between a body and earth, is non linear, with its intensity decreasing at higher positions from the Earth's centre. Thus the lower half of the body is very slightly heavier than the top half, which brings the centre of gravity of the object slightly lower than its centre of mass, which is the point about which the object can rotate. The longer the object is, the bigger is the CG shift downwards and away from its CM. So, according to such a pull concept, the CG down-shift and hence the potential energy in the vertical position, is much lower than the CG downshift in the horizontal position. This makes the vertical position slightly more stable, and if the object is set at any angle other than H or V, it will tend to rotate and oscillate until it finally settles in its vertical position, with its CG at the lowest possible location. Well, this is what the pull concept tells us and here [4] , you can find the mathematical derivation for the calculation of the CG downshift for a long rod.

Under the EMRP push concept, any object is permeable to a great extent to the incoming ultra cosmic radiation energy whose intensity gets only slightly weaker after travelling through matter. Thus if such radiation travels across the earth's core, a body on the other side will get radiated by a much higher intensity from above than from below, since the radiation coming from below has been attenuated by the earth's body, and so feels a net push downward. As a wave travels through any body, its intensity decreases, and so does its push, or its weight effect over a mass. Note the importance of discriminating between mass and weight. Weight is the resultant vector of all force vectors acting on the material body. In such concept the top half of the body will see a higher wave intensity than its lower half, thus shifting its centre of weight to a higher position than its centre of mass. Therefore EMRP predicts that the lowest energy orientation is when the rod is horizontal, because this is the position in which the CG has the lowest elevation and thus its lowest potential energy. So, if left to rotate freely from any angular position other than H or V, the object will oscillate until it settles in a horizontal position, in contrary to the pull gravity case.

Recapitulating from the EMRP theory section [5], the gravitational force between two bodies, taking into account the wave attenuation along each body is given by:

$$F = k\,\{M_1 e^{-(\mu_1 x_1)} M_2 e^{-(\mu_2 x_2)}\}/r^2$$

which reduces to $F = k\,\{M_1 M_2\}/r^2$ ... for the case when μ is neglected ($\mu=0$) as in Newton's Laws.

One can easily understand why the constant 'G' assumed constant in present mainstream theory can in practice vary between k and $k * e^{-(\mu_1 x_1)} * e^{-(\mu_2 x_2)}$, and why it's presently the worst defined constant in physics.

So basically, on one hand we have Newton's law, which by its inverse square function makes a long vertical rod bottom heavy, since it would act like a non uniform rod having a diameter which increases from top to bottom as a function of $1/r^2$. On the other hand we have EMRP that with its exponential attenuation function can make the rod top heavy, effectively changing it into a non-uniform rod having a diameter which decreases from top to bottom as the inverse exponential function of distance from its upper end. Note that with EMRP, the pressure is a function of the product of the inverse square of distance from the earth's core and the inverse exponential function with distance from the top end. So, for low attenuation coefficients, the exponential function gets closer to e^0 which is unity, and therefore for very low attenuation coefficients, EMRP reduces to Newton's law. In order to show a conflict between the two theories we will therefore need to carefully select the material for our test body. We chose lead (Pb), well known for its good shielding properties at Gamma frequencies, and for its weight, which is directly proportional to the momentum transfer between EMRP waves and matter. So, depending on the outcome of this experiment, we shall finally answer the question which science has been dragging along for the past hundreds of years. If the body settles in a position close to vertical, then, gravity is a pull innate within matter, but if it settles close to horizontal, then the gravity is an external push, driven by the momentum transfer of highly energetic waves as predicted by EMRP. The final outcome will highly depend on the attenuation coefficient of lead (Pb) at the ultra cosmic radiation frequency which I propose to be close to Planck's frequency, many times higher than the Gamma rays we are presently limited to detect by the most technologically advanced sensors.

Throwing in a few numbers

Taking an elongated cross section body of 6kg and 20cm long, we find Newtonian CG acts at about 0.1-(6.4e6*(√(1+.2/6.4e6)-1))= 7.8E-10m below CM. When tilted at 45° this becomes about half its value = 3.9E-10m, generating a torque about its CM of 6000gF*3.9E-8cm = 0.2mgFcm trying to align it to the vertical. Apologies for not using the standard Newton metres, but I feel this way gives a better understanding of the torques we are talking about. The frictional torque of an UNLOADED bearing is at best 0.11gFcm which is over 500 times greater than Newtonian torque. The frictional torque of a loaded bearing will be about 6000*.002*.4=4.8gFcm (0.002 is its coefficient of friction, 0.4cm its inner ring radius) which is 18000 times more than the expected Newtonian gravitational torque. This means that there is no way we can measure such a torque with a common bearing set-up. Luckily, we do not need to, since EMRP's torque will be in the opposite direction, and hence, any torque measured in the opposite direction will be only due to another non-Newtonian gravitational torque. In order to be measurable, such a torque should however be made to exceed the opposing frictional force of 4.8gFcm. The minute opposing Newtonian torque of 0.2mgFcm is negligible and can be ignored. So, the challenge is to get the absolute maximum value for the exponential function by choosing the highest linear attenuation coefficient in order to exceed the 4.8gFcm of opposing torque.

Figure 1, is a diagram showing the two totally different situations as predicted by the two opposing theories.

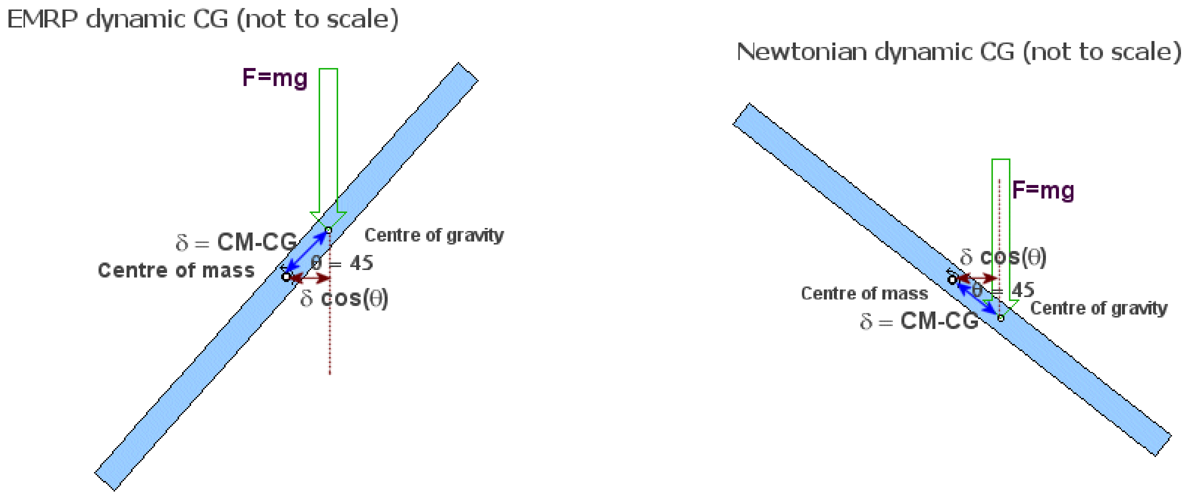

Fig: 1 Forces acting with (for EMRP) and without (for Newton's) EM radiation

In both diagrams the CG location is dynamic, and its distance from CM is exaggerated for the sake of clarity. You have a very small change in location, but the whole weight is acting at that point. For Newton's case, the CG is always below the pivot point, whilst for the EMRP case, the CG is always above the pivot point, and this holds true for any angular position of the rod about its pivot point. I've run a couple of simulations to determine the limit case for our required linear attenuation coefficient, and to confirm that the attenuation coefficient required to produce enough torque is not greater than the known attenuation coefficient at the upper gamma frequencies. Lead (Pb) has a linear attenuation coefficient μ=1.64/cm at 500keV gamma, and air has μ=112e-6/cm. The program uses the iteration derived on the EMRP section, and we manually adjusted the unknown parameter μ_m to get different output torques. In order to be able to simulate various materials, the simulator bases its calculation on the mass attenuation coefficient μ_m, which is related to the linear attenuation coefficient μ as: $\mu_m = \mu/\rho$. The EMRP pushing force can therefore be written as:

$F = k\,\{M_1 e^{-(\mu_m \rho_1 x_1)} M_2 e^{-(\mu_m \rho_2 x_2)}\}/r^2$.... where μ_m is the mass attenuation coefficient of the elementary units.

There is no way to find the real value of μ_m at such high frequency cosmic radiation, other than with such a setup.

Figure 2, gives a simulator screenshot at the lower limit for the experiment to just fail:

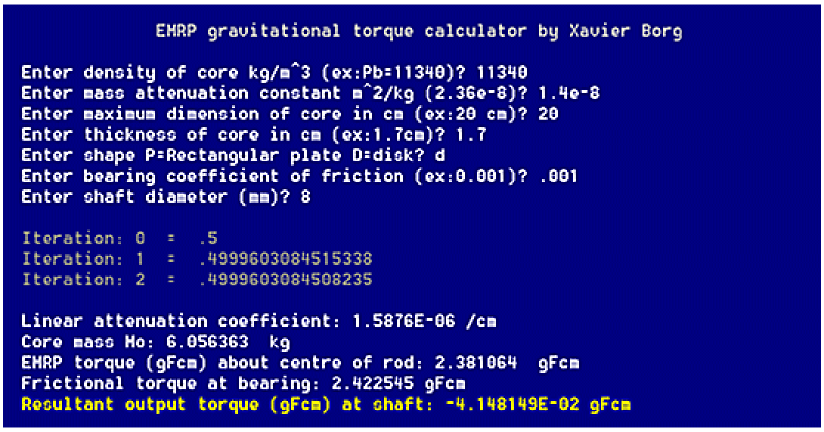

Fig:2 Program for running iteration and estimating EMRP gravitational torque (limit case)

Figure 3 is a screenshot of the simulator at an attenuation level which should give us enough torque to give absolute positive results:

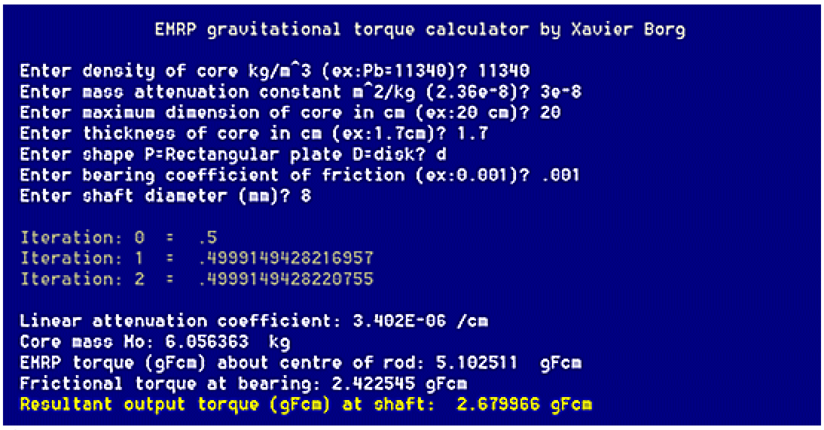

Fig. 3 Program for running iteration and estimating EMRP gravitational torque with higher att.coefficient

So, for a bearing coefficient of friction of 0.001 and at a linear attenuation coefficient of ~1.6e-6/cm, we have got a limiting case, and at ~3.4e-6/cm we should have a good outcome in favour of EMRP.

Experimental setup details

As one might presume, since the test will involve the detection of small amounts of torque, we first need to suspend our test object over a shaft able to rotate with minimum friction, and sturdy enough to eliminate any flexing of either the shaft, or bearing housings. The bearing housings will greatly affect the final bearing friction and overall reliability of our measurements, and are to be preferably milled to precision using a good quality CNC machine. Figure 4, shows a photo of two such housings:

Fig.4 Aluminium Bearing housings

Their dimensions are 100mm by 45mm by 50mm (depth) machined from an aluminium block. Four holes are drilled vertically to serve as mounting points to a proper stand by use of 4 x M10 bolts. A hole is drilled right through, having diameter 15mm and milled on the centre of one face at a diameter of 22mm and a depth of 8mm to accept a good quality 608-2RS oil-lubricated or dry ceramic bearings. The final bearing seating diameter should be brought down for proper bearing fitting using grade 400 sand paper or small Dremel tool. The bearings should be just tight enough in place that one can push them out of the housing without excessive force. Do not make them loose enough to fall out. This way, a very low static friction can be achieved.

Choosing the best bearings

Fig.5 : A selection of bearings we tested

Testing your bearing for static friction: in order to make sure you have got bearings that will be good enough for our purpose, insert the bearing on an 8mm horizontal shaft, measure and stick a small piece of Blu-Tack weighing 0.2gF on its outer ring and make sure the bearing turns around smoothly until the Blu-Tack is at its lowest position. Good hybrid bearings (lower three samples in Fig.5) turn with as little as 0.1g, that is, they offer a static (unloaded) torque of less than 0.11gFcm (gF=gravitational force acting on a mass of 1 gramme = 1 gramme x g). Some lateral play between the inner and outer rings is also preferable in order to better tolerate any small shaft misalignment, and most full-ceramic bearing types are too tight. I found that making up your own bearings is the best way to achieve the ideal conditions but off the shelf good ones, such as ABEC7 oil lubricated skate bearings should work fine.

The test core

As EMRP cores, we shall use a pair of circular flat lead (Pb) disks, 200mm in diameter, 8.4mm thick. These assure that the torque generated parallel to the axis of rotation is zero, even though this should not make any difference. In practice, you can imagine these units as a set of parallel thin rods mounted next to each other on the same shaft. We will thus multiply the effect of each such rod by the number of rods acting in parallel. The two plates are mounted over an aluminium sleeve which fits snugly over an 8mm hardened steel shaft. Two pairs of 64HRC hardened steel rods tightly clamp each disk in order to totally eliminate the possibility of any flexing during the tests, making the rotating body act as one rigid piece. The bearing housings are mounted on a rigid grounded stand, which can be rotated at any orientation on its wheeled base. This is used to check that no effect is due to the alignment with earth's rotation or magnetic field. The final setup is shown in Fig.6 below:

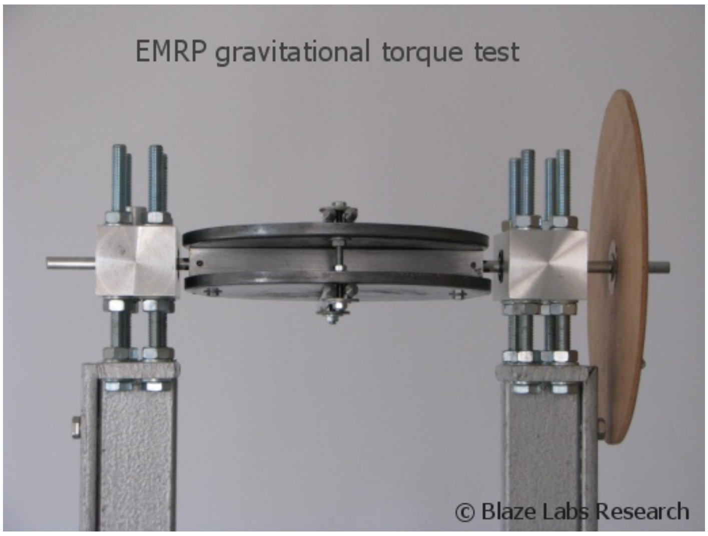

Fig.6 : A selection of bearings we tested

***Movie of experiment available online [6]**

Figure 6 is a close up photo of the test setup. The balancing disk is used for two different purposes. It is mainly used in order to obtain perfect balance at both horizontal and vertical positions before performing the experiment, and it is also conveniently used to measure the output torque by measuring how much extra weight one has to add to its rim to stop the core from moving when at an angle of 45°.

If *w* is the extra weight required at the 10cm radius disk rim, in order to stop the core from turning from both the 45° and 225° positions, then output torque is equal to 10**w* gFcm.

Results

A movie of part of the test can be downloaded online.[6] As one can observe from the movie, the torque is obviously tending to bring the cores to their horizontal position from *both* 45° and 225°. Such movement can only be generated by a dynamic movement of the centre of gravity. The extra mass at the disk rim required to stop the movement at these angles was measured to be 0.16g at the disk rim, which equates to a measurable output torque of 1.6gFcm. The real generated torque must therefore be equal to this value added to the frictional torque of the bearing, given by $T_f= \mu_f W*r$, where W=weight over the bearings=6000g, μ_f= bearing coefficient of friction=0.001, and r=shaft radius=0.4cm, thus T_f= 2.4gFcm. So, the total torque due to the CG shift at these angles is 1.6+2.4 = 4gFcm in the direction predicted by EMRP.

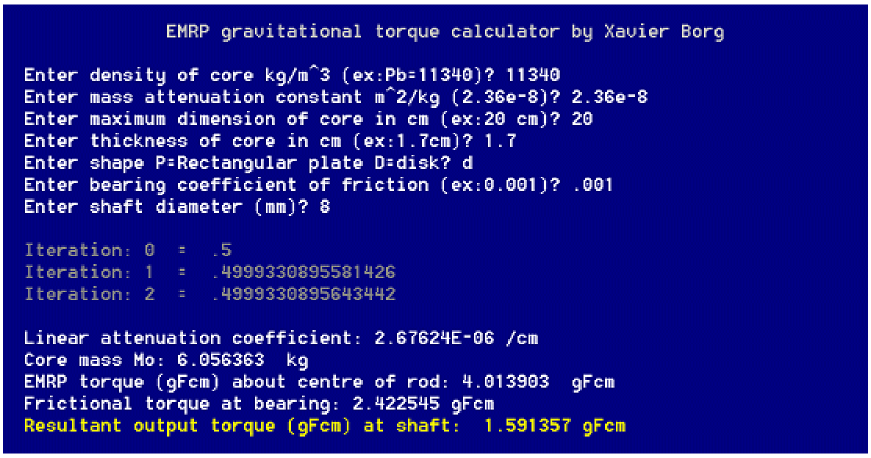

Fig.7 Screenshot of simulator to match experimental results

Running the iteration program to obtain our measured experimental torque value, we find that the upper limit for the linear attenuation coefficient for lead (Pb) at the gravitational wavelength must be close to μ=2.6764E-6/cm, making lead roughly 0.6 million times more transparent to EMRP frequencies than it is to 500keV Gamma rays, and about 42 times more transparent to EMRP frequency than thin air is to 500keV gamma radiation!

This experimental result builds a strong case in favour of EMRP, electromagnetic radiation pressure, pushing matter towards other matter as the most plausible driving mechanism behind gravity. Once independently replicated, we would have ruled out once for all, the false hypothesis of an innate pulling force within matter, and finally answers the big question '*What is gravity*'.

References:

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[5] EMRP Dynamic CG, X.Borg, http://www.blazelabs.com/f-g-shadow.asp

[6] Movie of experiment being performed (2.1Mb avi), http://www.blazelabs.com/pics/emrptt.avi