

Title - **THE GRAVITO-ELECTROMAGNETIC FORCE**

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Abstract –

The best place to begin is with Einstein, who revolutionized understanding of gravity and said “time and space and gravitation have no separate existence from matter” (this must include matter's electric charges and magnetic poles). Following the introductory paragraphs, Einstein's theory that gravitation is a push created by the hills and valleys of curved space is recalled and there's a paragraph explaining the Krasinsky/Blumberg astronomy paper in terms of gravitational waves being a repelling force, with a brief explanation reconciling this repulsion with gravity's apparent attraction. Believing everything from the quantum to the cosmic is intricately united, I shift to discussion of gravity, the ocean tides and cosmology. Then the final paragraph says gravitational waves move in two directions. Since gravitation forms matter and its forces, the dualism naturally extends to the electromagnetism of particles, resulting in electric charges that are positive or negative (combination of these two produces neutrality) and magnetic polarities being either north or south.

Keywords –

Gravitation; Electromagnetism; Tide; Cosmology; Charge; Magnetism

Text –

1.1

ALBERT EINSTEIN AND COSMIC BACKGROUNDS

The best place to begin is with Einstein, who revolutionized understanding of gravity and said “time and space and gravitation have no separate existence from matter” (this must include matter's electric charges and magnetic poles) [1].

When Einstein penned $E=mc^2$, he used c (c^2) to convert between energy units and mass units. The conversion number is 90,000,000,000 (light's velocity of 300,000 km/s x 300,000 km/s) which approx. equals 10^{11} . Gravity waves with a strength of 10^1

are, via quantum gravitational lensing, concentrated 10^{24} times after they're focused to form matter (to 10^{25} , weak nuclear force's strength* - giving the illusion that a weak nuclear force that is not the product of gravitation exists).

Waves are magnified by the matter's density to achieve electromagnetism's strength (10^{36} times gravity's strength) i.e. 10^{25} is multiplied by Einstein's conversion factor [10^{11}] and gives 10^{36} (this gives the illusion of the existence of electric and magnetic fields that are not a product of gravitation). After absorption by atoms, the depleted remnant of the gravity waves is re-radiated from stars, interstellar gas and dust, etc. It's radiated as gravitational waves (a Gravity Wave Background, challenging the idea that Cosmic Inflation was necessary to generate gravitational waves [2]) which have lost most of their energy or strength during formation of forces (returning to a strength of 10^1). Since gravity can produce electromagnetism, it's also radiated as low-energy electromagnetic waves – possibly an infrared background whose heat output exceeds that of the stars alone, in addition to a microwave background. The latter challenges the idea that existence of the cosmic microwave background proves the universe began with a Big Bang [3 – also see subsection 1.1.1].

* Remember, this is only one example: the so-called weak force's "strength isn't constant" and varies with distances [4].

1.1.1

ISAAC NEWTON AND DUST

The cosmic microwave background or CMB is assumed to be left over from the "Big Bang" of cosmology, and was discovered in 1964 by American radio astronomers Arno Penzias and Robert Wilson. A problem with microwaves from dust is pointed out in [5] –

The 1981 article [6] attempted an explanation of the CMB by claiming that it came from dust within our galaxy. In his letter [7], P. M. Steidl also pointed out that this explanation had been attempted already (by supporters of the steady state model), but that this explanation was lacking. The primary problem is that dust is very clumpy, and hence we would expect that if the CMB came from dust the CMB would be very clumpy. However, the CMB is very homogeneous. Also,

radiation from dust has too high a temperature to be the source of the CMB.

Most of the problem simply disappears when the universe's infinity * is combined with its quantum entanglement, because this solves the primary trouble of clumpiness. A universe of finite size can be pictured as filled with a limited number of microwave sources (stars, gas, dust) and would be very inhomogeneous. The infinite universe advocated here would be filled with those microwave sources - it would be very homogeneous. At first, this appears to be too smooth, because the CMB has tiny fluctuations and is only isotropic to roughly one part in 100,000 – a problem fixed by the quantum nature of quantum fluctuations of 1's and 0's **. The vast majority of microwaves from those sources could never reach Earth or any other particular spot in the universe when the waves are travelling at the limited speed of light (which is the speed of all electromagnetic waves). This re-introduces inhomogeneity, which again vanishes upon remembering that the famous 17th-century scientist Isaac Newton once said the entire universe would instantly feel the loss of the sun's gravity if our star disappeared suddenly – I think modern science doubts this but the Unified Field created by everything in the universe being quantum entangled forces me to agree with him. In the same way, any microwave source in the infinite universe would instantly make its presence felt on Earth, restoring the homogeneous microwave background.

* "The evidence keeps flooding in. It now truly appears that the universe is infinite" and "Many separate areas of investigation – like baryon acoustic oscillations (sound waves propagating through the denser early universe), the way type 1a supernovae compare with redshift, the Hubble constant, studies of cosmic large-scale structure, and the flat topology of space – all point the same way." [8] Support for the article – a) after examining recent measurements by the Wilkinson Microwave Anisotropy Probe, NASA declared "We now know that the universe is flat with only a 0.4% margin of error." [9] and b) the shape of the Universe found to best fit observational data is the infinite flat model [10]

** This is an idea I had after thinking about cosmologist Max Tegmark's hypothesis that mathematical formulas create reality [11] –

photons and gravitons are ultimately composed of the binary digits of 1 and 0 encoding π , e , $\sqrt{2}$ etc.; and matter particles are given mass by photons/gravitons interacting in matter particles' "wave packets" (giving them wave-particle duality)?

The temperature problem can disappear when microwaves contact matter that's distant from the matter they radiated from. They heat it just as microwave ovens heat food. Repeated absorption and re-radiation at lower energies by these homogeneous sources throughout the infinite universe lowers the temperature from "too high" to the recent measurement of 2.72548K [12]

1.2

THE STEADY STATE, BICEP2 AND FRACTAL GEOMETRY

The source of microwaves proposed in 1.1 should be kept in mind when it's proposed that our observable portion of the infinite universe is expanding not from a Big Bang but from the energy of an infinity of binary digits being converted into the matter occupying space-time. The "new" matter pushes the "old" aside, causing the observable universe to expand. This agrees with the Law of Conservation of Mass-Energy which says neither matter nor energy can ever be created or destroyed. Fred Hoyle, Hermann Bondi and Thomas Gold calculated (in the middle of the 20th century) that, barring the accelerating expansion of our observable universe which was only discovered in 1998 [13], matter or energy has to be created at a rate equal to one hydrogen atom in each quart of space every half-billion years to keep the universe in a "steady state" [14]

On 17 March 2014, astrophysicists of the cosmic microwave background experiment called BICEP2 (Background Imaging of Cosmic Extragalactic Polarization) announced the detection of a swirling imprint of inflationary gravitational waves in the Cosmic Microwave Background. Reporting these results [15], theoretical astrophysicist Katie Mack says –
"Two papers came out (not long after BICEP2's initial announcement of inflationary gravitational-wave imprints in the cosmic microwave background) showing that the BICEP2 signal – the one that was supposed to be a beautiful picture of gravitational waves – could have

been entirely due to dust in our Galaxy mimicking the primordial signal.”

Microwaves from homogeneous microwave sources, including widely scattered dust, appears consistent with her report.

1.1.1 states, “photons and gravitons are ultimately composed of the binary digits of 1 and 0”. Referring to gravitons - gravity and gravitational waves (and space-time, whose warps are gravity according to General Relativity [16]) are also ultimately composed of the binary digits of 1 and 0. Since space-time is composed of gravitons, gravity does not need to travel – the gravitational field already exists everywhere. Nevertheless, any disturbance (from the waving of your hand to explosion of a supernova) will send ripples called gravitational waves through the universe. Since gravity makes electromagnetism, the universe is also a giant electromagnetic field. Electromagnetism is ubiquitous and doesn't need to travel, but any disturbance sends out electromagnetic waves.

Electromagnetism's property of existing everywhere naturally means things like microwaves must be everywhere, and there would be a Cosmic Microwave Background whether the Big Bang and Inflation occurred or not. The electromagnetic field's superposition on the gravity field also means gravitational imprints would be found in the microwave background by experiments like BICEP2 [17]. However, such detection does not necessarily confirm either the Big Bang or inflation (or the multiverse belief that has grown from them). The universe would not be unified to near-uniform temperature and curvature by the whole cosmos having once been small enough for everything to be in contact, then undergoing extremely rapid expansion from a big bang during a period called inflation. It would be quantum entangled (unified) by everything having the same origin of binary digits. The digits unite everything in time and space in the same way that 1's and 0's form an image. Even if that image contains many seemingly separate elements like sights and sounds and smells, it's still a single “image”.

It could logically be argued that the graviton has not been discovered by experiments, so every proposal here involving gravitons is building on quicksand. This is why discovery of gravitons is 100% inevitable –

Mathematician Benoit Mandelbrot coined the word fractal in 1975 (a fractal is a shape such that, if you look at a small piece of the shape, then it looks the same as the original, just on a smaller scale – it is used to describe coastlines, mountain ranges, etc). The fractal versions of superposed electromagnetism and gravitation are, respectively, the quantum superposed photon and graviton. Photons have been discovered and the existence of gravitons is just as certain.

1.2.1

THE ASTRONOMICAL UNIT AND THE TIDES

Recalling Einstein's theory that gravitation is a push created by the hills and valleys of curved space, here's a paragraph explaining the Krasinsky/Blumberg paper in terms of gravitational waves being a repelling force -

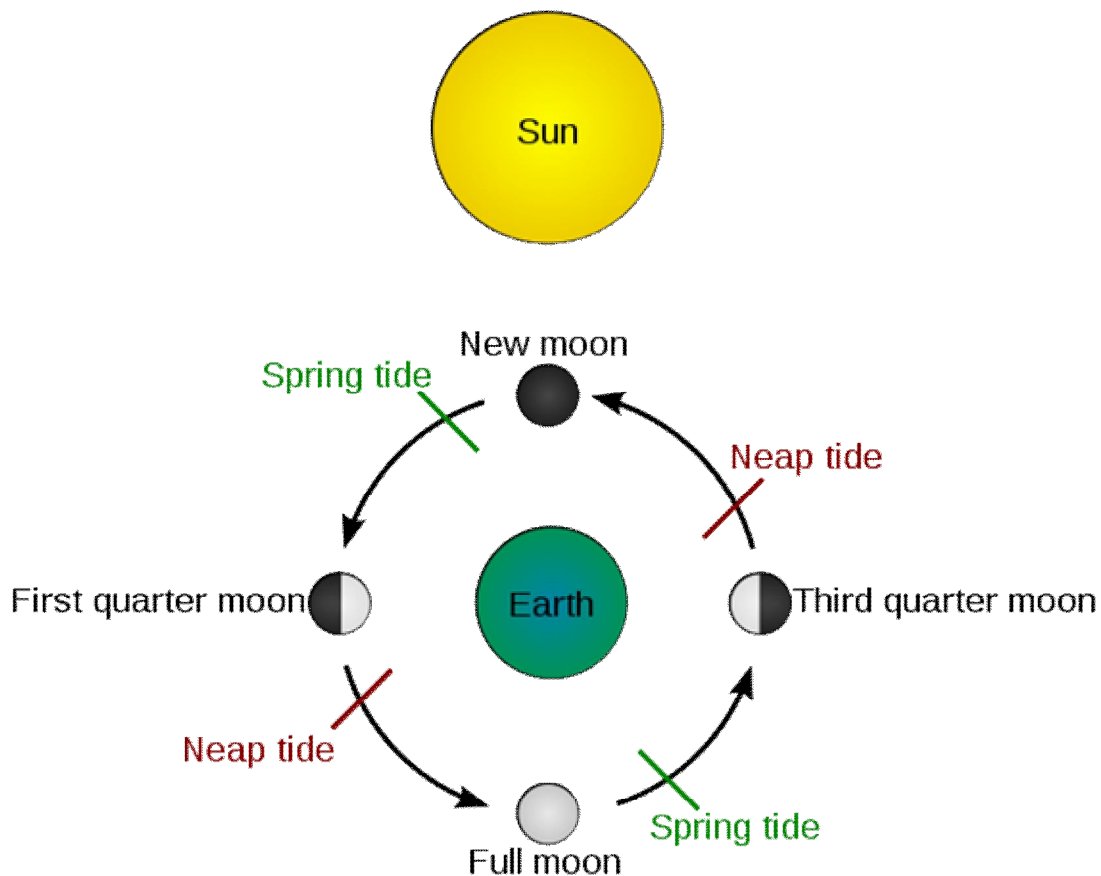
More than 99% of the solar system's mass / gravity / gravitational waves are associated with our star, so the gravitational push on Earth from its sphere may be slightly greater than the push resulting from the waves originating in deep space (these originate from a far greater volume but are far less concentrated). In the end, our planet's orbit would be growing slowly larger. According to [18]; the distance between Sun and Earth is growing by approx. 15 centimetres per century.

I believe that - since Relativity has partly revised Newtonian gravity - the idea of Newton and Kepler that the moon causes the tides cannot be 100% correct. Perhaps it needs to be joined with Galileo's idea that the Earth's movements slosh its water. Using this Galilean/Keplerian/Newtonian model, gravity's apparent attraction can be summarized by the following –

Gravitation is absorbed into wave packets and the inertia of the gravitons carries objects towards Earth's centre at 9.8 m/s or 32 ft/s. The mass of the oceans on Earth is estimated at nearly 1.5 billion cubic kilometres [19]. All this water is being pushed towards Earth's centre at 9.8 metres per second every second. But the seafloor prevents its descent. So there is a recoil, noticeable offshore (it is only where oceans and continents meet that tides are great enough

to be noticed). This recoil is larger during the spring tides seen at full and new moon because sun, Earth and moon are aligned at these times.

The rotating Sun bulges at its equator and therefore has a larger equatorial than polar diameter, and more mass at its equator. This means more gravitation has been diverted to that region and formed more mass. Planets are also made from gravity and electromagnetism interacting, and must consequently lie in the path gravity waves took from the outer solar system to the solar equator (more gravitation was diverted here - so if planets are created by gravity and electromagnetism, it follows that they'd be created where the gravitational "current" is greatest). For simplicity, we say the Sun's gravitation is strongest at its equator and planets are compelled to orbit in the ecliptic plane. Alignment of Sun, Earth and moon therefore refers to their being lined up "where the gravitational current is greatest" and more of the gravitational waves travelling from the outer solar system being captured by solar and lunar wave packets. Less of them are available on Earth to suppress oceanic recoil (there are still enough to maintain the falling-bodies rate of 9.8 m/s^2). At the neap tides of 1st and 3rd quarter; the sun, earth and moon aren't lined up but form a right angle and our planet has access to more gravity waves, which suppress oceanic recoil to a greater degree. We can imagine the sun and moon pulling earth's water in different directions at neap tide. If variables like wind/atmospheric pressure/storms are deleted, this causes neap tides which are much lower than spring tides.



1.2.2

ELECTRIC CHARGES AND MAGNETIC POLES FROM GRAVITY, AND OTHER QUANTUM OR VIRTUAL MATTERS

So gravitational waves move in two directions (the example was used of waves from deep space reaching the Sun, and waves from the Sun pushing Earth to increase the Astronomical Unit or Earth-Sun distance). Since gravitation forms matter and its forces, the dualism naturally extends to the electromagnetism of particles, resulting in electric charges that are positive or negative (combination of these two produces neutrality) and magnetic polarities being either north or south. The sequences of 1's and 0's could not only form matter when interacting as photons and gravitons. The various sequence changes could produce gluons, weak bosons, photons, and the Higgs boson. The 1's and 0's could also not form particles at all, and be the quantum fluctuations of space-time's so-called Virtual Particles. Since

Relativity says space-time's curves are gravity, I wonder if the graviton has eluded discovery because it's actually a virtual particle, and scientists are searching for a physical particle. This article says gravity's partly responsible for producing mass, not the Higgs. But since the Higgs field talks of smallest possible excitations, perhaps we could reserve "Higgs field" for the binary digits that may be the fundamental constituents of the entire universe (including gravity).

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