Gravity: The Great Attraction – and The Great Enigma

Image credit: NASA (NSSDC)

For many thousands of years man has looked up at the stars and wondered about the forces that keep them moving in their endless dance. More recently, less than 350 years ago, Isaac Newton saw that these were the same forces that brought apples down from trees, rain down on our heads and us back down to earth when we jumped upwards.

It was just under a century ago that Einstein gave us a description of gravitation as *curvature of spacetime*, with massive bodies such as a planet or a star creating great dents in the fabric of the cosmos. Smaller bodies, such as moons, satellites or even the planets themselves, roll around the inside of those dents just as an orange would roll around the inside of a fruit bowl. Cosmologist John Wheeler paraphrased this idea in the quote given above.

Gravity has always been an enigma, with a number of questions attached to it:

(1) Why does gravity always attract, never repel like static electricity and magnetism do?

(2) Why is gravity so weak compared to those forces?
(Only 1/1,000,000,000,000,000,000,000,000,000,000,000,000,000th of their strength!)

(3) How is it that the effect of gravity reaches right the way across the universe?

All of these questions, as well as those questions about what 'curved space' is and how it works, are answered by just one simple proposal, spoken of by mystics for thousands of years and supported by reams of well-established findings from top scientists, spanning more than a century. That simple proposal, presented in detail in a previous paper, is: 'All elementary sub-atomic particles are formed from photons of electromagnetic energy – light' (including non-visible frequencies).

Now a second paper by the same author, Dr Grahame Blackwell, has been published in 'Kybernetes', the journal of the World Organisation of Systems and Cybernetics. 'Cosmic system dynamics: a cyberneticist's perspective on gravitation' appears as an invited paper in the final issue of the 40th anniversary volume. Referencing over thirty peer-reviewed publications, including works from four of the world's greatest Nobel laureates, it builds on that previous paper to show how light-based particles of matter could be responsible for creating every effect that we attribute to gravitation.

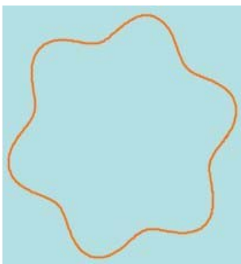
The first important thing to notice is that light travels as waves, which are spread-out phenomena. One of the giveaways about particles is that they have also been shown to behave like waves. This means that even though particles of matter seem to us to be compact, localised things their influence actually extends far beyond what we see and feel – without limit, in fact. Research has shown that if an electron, for example, is formed from a closed-loop photon, that photon's extended electromagnetic field would account for the electric charge effect that spreads out in every direction from that electron.

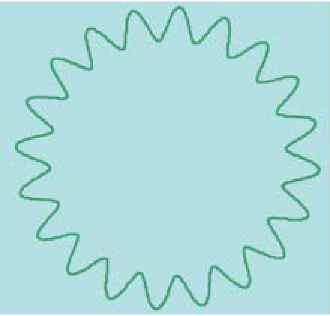
To understand what's going on with gravity we need to look a little closer at this electric-charge issue.

Every photon is *circularly polarised*, either clockwise or anticlockwise – or a combination of the two. (A mixture of photons in different polarisation states is what causes the glare from water or snow, which is why we wear *polaroid* sunglasses to cut out that glare.) Research shows that circular polarisation in one direction for a closed-loop photon gives its particle a particular charge; this suggests that circular polarisation in the other direction would give a particle the opposite charge.

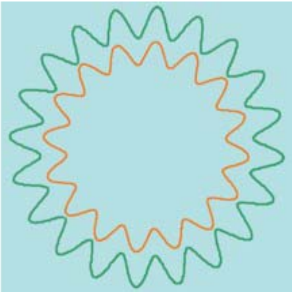
One reason that gravity hasn't been linked to static electric charge effects – balloons sticking to walls, vigorously brushed hair standing on end, etc – is that the gravitational pull of, or on, an object is always proportional to its mass whereas electric charge seems to be unrelated to the mass of the charged particle or object. This is actually very simple to explain, just by referring to the previous paragraph.

This picture represents a particle formed by a closed-loop photon that's circularly polarised so as to give the particle a *negative* charge. The frequency of this photon is six waves per cycle around the loop.* This frequency will determine both the mass of the particle and its charge – so in this case the charge on the particle is proportional to its mass.





This second closed-loop wave represents a particle that's formed from a photon circularly polarised in the opposite sense, to give the particle the opposite charge. It has twenty waves per loop cycle and so will have more than three times the mass of the first particle and also more than three times its charge - again the charge is proportional to the mass for this particle.

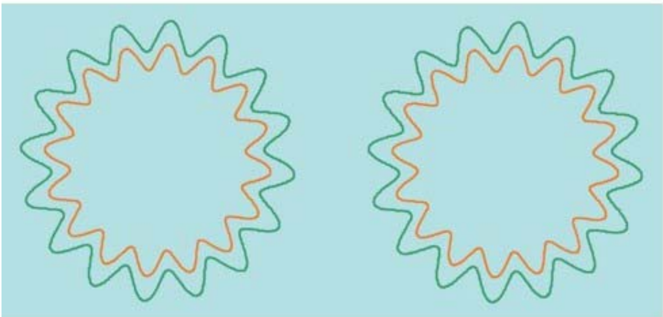


The third particle is formed from a closed-loop wave that contains both clockwise and anticlockwise polarised components, giving a mix of positive and negative charge. The proportions of those two components are shown as proportions of the overall frequency of the wave: twenty positive, sixteen negative. This gives an overall wave frequency of thirty-six waves per cycle around the loop – six times that of the first particle – which means that the mass of this particle will also be six times the mass of that one. But of course the net charge carried by this particle will be the *difference* between the positive and negative components – equivalent to a frequency of just four. So this particle, despite being six times as heavy, only has two-thirds as much charge as that first one.

[* For ease of explanation we're working here with particles that all have the same sized photon loop – so the photon's frequency in waves per second relates directly to the number of waves round the loop.]

So we can see that overall charge, even though it involves all of the energy in a particle, can have a value that seems to be unrelated to that energy content – and so unrelated to the particle's mass. We can see, too, that if a particle had equal components of clockwise and anticlockwise polarised photon energy then it would carry a net charge of zero, no matter how heavy it might be.

So what has this got to do with gravity?



Well, let's put two 'electrically neutral' particles together and see (both are 16 positive & 16 negative). The conventional view says that, since they carry no net charge, there's no electrostatic effect between them – just a tiny, tiny gravitational attraction.

If we tot up attracting and repelling effects, that does seem to be the case:
Green attracts orange and orange attracts green:
16x16 + 16x16 = 512 units of attraction
Green repels green and orange repels orange:
16x16 + 16x16 = 512 units of repulsion

So we seem to have equal amounts of attraction and repulsion – no overall effect.

But hey, wait just a minute! We're assuming something pretty major here.

We're assuming that 'units of attraction' and 'units of repulsion' are exactly equal in their effect, as well as opposite. There's no reason why that should be so – in fact there are good reasons to believe that the attractive effects produced by electromagnetic fields around particles could be a tiny, tiny amount more than the repelling effects for each unit of attraction or repulsion. In this case we'd have 512 bits of that tiny, tiny amount, that difference, attracting these two particles towards each other.[1]

Just as an example, if each unit of repulsion has force 1 and each unit of attraction has force 1.000000000001 (exaggerating slightly), then 512 of each gives a net attracting force of 512 x the difference: 0.000000000512.

That tiny, tiny difference could be what we refer to as 'gravity'.

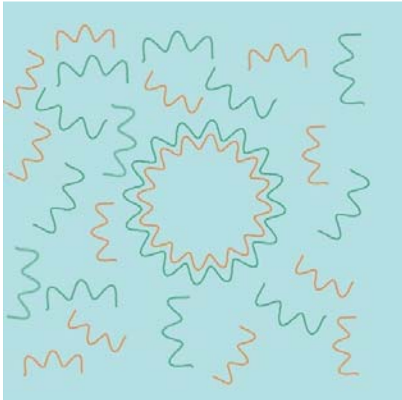
Putting it all together

So, then, we have the two halves of the picture. First we have each and every one of the particles in, say, a planet formed from cyclic photons – electromagnetic waves that spread out into space without limit in every direction (though of course they get weaker as they get further from their particle in each case). This means that the whole of space is teeming with electromagnetic wave effects, even though we can’t see them, that each carries a positive or negative electric-charge influence. The concentration of those waves will be much stronger

[1] Notice that 512 is half of what we get if we multiply the overall frequencies of the two particles – 32 in each case – together. That half is a standard factor in the maths of this approach. Since the mass of a particle is proportional to its energy, which is proportional to its photon frequency, this means that the attracting force between two electrically neutral particles is proportional to the product of their masses. That's exactly what we'd expect, since that's the principle that applies to gravity.

near to the planet than further away from it, effectively forming a sort of ‘pit’ that objects passing close to the planet can fall into, as we’ll see in a moment.

Secondly we have, let’s say, a space station close to the planet. The space station is also made from particles, and each of those particles is also formed from cyclic photons that have both positive and negative electric charge components, in effect. It’s inevitable that each of the electric-charge influences that surround the planet, coming from the planet’s own particles, will either attract or repel each of the electric charge components in the particles of the space station, depending on whether the charges are opposite or the same in each case.



This picture shows a zero-net-charge cyclic-photon particle (equal positive and negative components) in a ‘sea’ of charge effects, both positive and negative, from a nearby massive object. This could be a particle of that space station being affected by charge influences from the nearby planet.

You’ll see that those influences are pretty evenly spread as regards positives and negatives. You’ll also see that they are more concentrated in the upper left-hand region. This indicates that the planet must be up and to the left of this particle, as they spread out with distance (that difference in concentration has been deliberately exaggerated).

This means that there’s more attracting ***and*** repelling of the particle going on in the upper left direction. So, if the attracting force is stronger than the repelling force, there’s more of that difference, that overall attraction, in that direction.

So this particle, along with all of the other particles in the space station, is attracted towards the planet. This means that the space station will continue to orbit around the planet rather than flying off in a straight line out into deep space, as it would if there were no force pulling it towards the planet. It’s just as if those charge effects form a dent in space around the planet, a dent that things fall into or roll around the inside of.

Pretty much the same applies to you or me, if we jump up in the air: we don’t head off into deep space, either, for much the same reason. Apples fall from trees, raindrops keep falling on our heads and planets continue in their orbits around the sun – all because of that minute difference between those attractive and repelling forces. Those forces create a dynamic virtual landscape across the universe, carving out deep ever-moving *gravity wells* in the regions of celestial bodies – the more massive the body, the deeper and steeper the virtual indentation.

This paper follows that line of reasoning with mathematical precision and scientific detail. And it shows that this way of looking at things could explain **every** effect that we attribute to something called 'gravity'. Including not just the plains and abysses of curved spacetime, but also various other effects that Einstein listed in his General Theory of Relativity – his theory of gravity.

All of this – without gravity actually existing at all as a separate effect in its own right ...

Technical observations

There are two technical issues that need to be covered by any theory of gravity. The first is the obvious fact that gravitational effects extend indefinitely and can't be blocked: for example, you can't stop an object from being affected by the earth's gravitational field just by sticking a metal plate under it - the earth's gravitational effect goes straight through it. Otherwise antigravity devices would be trivially easy to make.

The second issue arises from conventional General Relativity, which says that any gravitational field has to be *Lorentz covariant*. This basically means that the gravitational field must appear identical to all observers who are moving at a constant velocity, whatever their speeds may be relative to each other. That requirement comes from a fundamental principle of Relativity which says that all states of constant-velocity motion are equivalent.

The first of these issues is covered by something called the *Aharonov-Bohm Effect*. Noted physicist David Bohm and his student Yakir Aharonov (now a distinguished university professor) discovered that, although classical electric and magnetic field effects can be blocked by metal structures such as a *solenoid* or a *Faraday cage*, quantum electromagnetic potential isn't blocked. That *vector potential* causes changes in interference patterns in electromagnetic waves – exactly the sort of influence that gives rise to gravitational effects under the cyclic-photon model of material particles. The Aharonov-Bohm effect is a well-documented and well-accepted feature of quantum physics.

The second issue, *Lorentz covariance*, is based on the unproven assumption in Special Relativity that all states of constant-velocity motion are equivalent. In the cyclic-photon model of matter it is shown that this is not the case and so the restriction placed on a gravitational field by this assumption doesn't apply. The earlier paper referenced above derives an extended version of the *Lorentz Transformation* from first principles, identical to the version used in Relativity except that it doesn't assume symmetry of motion states; the description of gravitation given in this paper is totally compatible with that view.