Maldwyn Centre for Theoretical Physics

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In the same vein as last quarter, these ideas are not necessarily correct, but provide some new directions that deserve future investigation. They involve a re-thinking of how meons and their different types of energies interact. Also included are some other aspects to start with.

Chase motion and viscosity density slope as partially producing gravity

It might be thought that chase motion is the equivalent of perpetual motion, but this is not the case. In the same way that current physics requires the action of photons and other particles to interact with each other, best known in the anomalous magnetic moment of the electron, the same is the case with chasing. Instead of the interactions needed to transmit the electromagnetic force, the interactions are made to maintain the angular frequency of the fermions. The motion of the meons around a loop and of the loop to translate against the background always requires energy, which shows up as the viscosity red-shift of photons. The surrounding photons provide the lost energy through continual interactions, maintaining the fermion and quark loops at their locked-in sizes relative to a frame of reference in which the fermions are stationary. The greater the number of fermions and quarks in any volume, meaning overall mass density, the greater will be the loss of energy by the interacting photons. This is probably either part of the source of the gravitational red-shift or a small additional effect.

It may be that the different amount of viscosity present, measured by the mass in the local volume, is also a factor in the gravitation felt by loops. Where there is more mass, there will be greater viscosity, which will slow the loops more than volumes with less mass. The need to provide the extra energy needed to maintain a loop at its locked-in size at volumes with more mass will mean greater energy losses by photons providing that extra energy, in the form of increased loop frequency.

So a mass falling from one height to a lower height, losing what we call potential energy (in a negative sense) but gaining kinetic, is moving from a lower source of energy contributable by photons at the higher position to a greater source of energy in the lower position. The need for photon interactions is lower at the high position and higher at the low position. In the case of a loop in ‘empty’ space, there are fewer photons and less need for them to interact because there is less viscosity. Although there is an equal and opposite increase in the kinetic energy of the meons in the fall, shown in near maintenance of the loop frequency in an external frame of reference, the move into a denser region ensures that the result will be increased viscosity and a lower loop frequency.

In addition to the viscosity felt by individual meons in the loops, there are also the chains of ZMBHs that are attached to each meon, providing mass frame-dragging and electromagnetic lines of force. As the local environment gets denser, the chains will lengthen, slowing the loop frequency even more. The extreme case is approaching close to a large black hole, where the stretching of the loop and its lowering frequency eventually breaks the loop back into a chain.

The feedback effect of slower loop frequency, increased attached chains and increased viscosity towards denser regions drives the loop towards increasingly denser regions. It is not the mass of the meons which drives this effect, but their reducing velocities around the loop which enables greater distances between each meon in a loop and allows more chains to attach to them. The area of the loop is thus the direct measurable for the size of the effect. This area also the proxy for the 'mass' of the loop, so as a loop falls into a black hole the mass reduces and becomes zero as the loop breaks into a chain. The mass energy of the loop was its rotational rate, which has been transferred during the fall into the attached chains, net photons emitted and local environment – in this case the black hole mass, rotation and charge.

So gravitation may be partially the effect of the slope of viscosity density in the local volume. Any local discontinuity in viscosity density, such as a mass in the form of a non-merged ZMBH, loop, stack, zeron or planet, will cause the slowing of the meons in the nearer section of a subject loop with consequent slide down the viscosity slope towards the increased density source.

The sliding motion described only ceases when the loop encounters opposing effects, due to either electromagnetic forces or different viscosity slopes, or the acquisition of motional energies and forces in the appropriate direction.

This interpretation is very much along relativistic lines where it is the local contours of the presence of mass and energy that define the slope of space-time for the effects that look like gravity in action. What is different is that here the definition of space-time is the background and bodies within it – actual particles being vibrating ZMBHs, zerons and other loops - and the causation of movement is the differential effect of viscosity on meons within loops.

That is not to say that the orientation of the loops relative to the local viscosity slope at individual loop level is an overriding factor in how the loop moves. Most loops are within loop combinations like photons, nucleons or atoms. The sizes of the latter two loop systems means that their orientation relative to a local viscosity slope will not be of great significance in how they react to the local slope. For photons, which must travel with loop planes perpendicular to direction of motion (otherwise some meons must exceed *c* in order to catch up with the others in their loop) the orientation matters more when there is only one photon in a photon stack. Photon stacks can be any length because it is only the rotational frequency of the loops that matters – all the loops may be fully merged as they travel and only unmerge on disruption – and in any case all loops have zero energy in total anyway.

The conclusion must be that orientation of single photons relative to the local viscosity slope does matter, but only in how fast they react to it. A photon travelling directly towards a star will have all its meons slowed simultaneously as the viscosity increases towards the star. A photon travelling past a star will have the differential effect of the viscosity slope acting across the loop. Both will have their rotational frequencies reduced, but the passing photon will have its meons slowed in rotation preferentially when they are closer to the star and thus the path of the photon will be bent towards the star.

This overall effect is to move the loop towards the denser viscosity regions in the local environment. This is exactly the same as the effect of gravity and may provide a way to estimate the effect of viscosity on meons, equating local gravity partially to the slope of local viscosity.

Matter and Anti-matter

When considering the usual definitions of matter and anti-matter and whether anti-matter has negative gravitational effects, it is still a subject of investigation. In the theory promoted here, with its different definition of how to distinguish between matter and anti-matter, there is no question of any negative gravitational effects in respect of the mass of any loop (the associated chase effect between loop and anti-loop is what forms a photon but does not affect the gravitational effect). The 'mass' of any loop is expressed in its area and how it deflects the surrounding background, as described above). So for the standard interpretation, the way to describe how anti-matter acts gravitationally would be as follows. If an electron and a positron are considered matter and anti-matter respectively (disregarding spin orientation), and they together constitute a photon travelling past the Sun, then either the photon is deflected by the gravity of the Sun or it is not. Since it has been observed that a photon will be deflected, then the two particles must be affected by gravity in the same way. Otherwise there would be no deflection, the two being of equal size. At the lowest level possible, everything with zero overall charge in the universe is composed of equal charge amounts of matter and anti-matter. What we term as mass is just deflection by the component loops – equally for either charge and dependent only on loop radius.

Energy Conservation and how to show that all loop energies total zero

Since photons are composed of loop and anti-loop completely merged together at meon level, what constitutes a photon could actually be a stack of photons. The stack would be multiple fully merged loops and anti-loops, but what would be observable would be only the rotational frequency of the stack. So the stack would look like one single photon, with one energy represented by its frequency. However, on sufficient perturbation, the stack would break into as many multiple photons as were inside it. So observation would show one energy giving rise to multiple energies. This would appear to run counter to conservation of energy. But actually it would show that what is currently defined as energy is wrong, that all loops always have zero total energy and that photons can be a stack hiding multiple same sized photons. That seemingly identical particle decays already have branches which involve producing either two or three photons suggests that photon stacks have already been seen but not recognised.

Colour, strong and electromagnetic interactions.

Although this was covered in depth last quarter, an uprated spreadsheet system has improved the analysis and now includes the Z axis of interactions. Some of the resulting graphs will be attached at the end of this update.

The conclusions can be stated as follows, within the limitations that:

1 The constant used in the exponential decay of the fundamental mass and charge forces is arbitrary, but chosen in the spreadsheet to become zero close to, but inside, where the colour force is understood to exist for nucleons. The constant could be another value, but this will only change the distances at which the forces alter, rather than changing the overall shape of the curves.

2 The graphs showing Y distance changes all use Z=100 DAPU distance units, so are not exactly planar between the two interacting loops.

3 The graphs showing Z distance changes all use Y=1 DAPU distance unit, so the two interacting loops are not exactly stacked directly over each other.

4 Only same radius-sized loop interactions, either electron or one-ninth proton size (assuming nine loops in a proton stack), have been investigated so far and only one influence distance. The neutrino has been treated as an electron sized loop and the neutron as proton sized.

5 The twist force has been modelled as becoming zero beyond the influence distance.

Conclusions

A All loop interactions have the same overall force profile over short distances, regardless of their q charges. So even neutrinos are Ms attracted to other loops at small separations and can thus exist within nucleon stacks, as can electrons.

B The differences between interactions only become apparent at separations of either around the loop radius used or beyond the relevant influence distance.

C There are net zeros of forces for X, Y and Z axes inside the influence distance for all loop combinations, showing that stable stacks, regarding Ms and Qq forces only, can be formed. Inside these zeros the net forces are Ms attractive. However, this analysis does not consider the rotational symmetry needed to enable a stack combination to be stable rotationally – as in the balancing or a rotating wheel by weights.

D Beyond the influence distance, only the q forces act, and do so as expected. The 'mass' of the loop comes from its interaction with the background and can be thought of as the area of the loop floating on space-time.

E Loops rotating in the same direction (+w) have peak Qq force values that repel, whereas loops rotating in opposition (-w) have peak Qq attraction. Qq is attractive or repulsive at different Z distances for whichever rotational direction. Same direction +w has a maximum around loop radius separation which is repulsive in Qq, attractive in –w.

F There are chase forces at some zeros when considering non-stacked interactions.

But

G There are no net repulsion forces inside the influence distance for single-loop to loop interactions.

It should also be noted that since the colour force is not actually a force, but an asymmetry in the loops, what the force at action between loops in a stack may be is the differential effect of either being or not being correctly asymmetric. If the loop is appropriately asymmetric for the stack, then it will be held in place by the forces acting as above. But where it is not appropriate, the stack will not be able to maintain itself in balance and will break apart. So the colour force is effectively a blend of the forces in action between sacking loop and their mutual balance.

This extends to the strong force, acting between stacks of loops in a nucleus. Although the forces can be calculated and refined further, it is probably the difference between being an appropriate stack and a not-appropriate stack that is the difference between being at a stable distance from each other and being repelled because they are not appropriate. Given that there are stable states for all individual loops as modelled above, it must be the collective stack properties which provide no stable distance between stacks when they are not mutually appropriate. This has not yet been modelled. The modelling used can adjust the decay rate, and so the distance of interaction of the M and Q forces. It can adjust the range over which the s and q forces balance and the influence distance beyond which only the q forces act.

Electromagnetic parameters reinterpreted as mechanical parameters

Also attached below is a preprint of a paper nearing publication which considers how the electromagnetic parameters can be reinterpreted as mechanical using the dimensionality of the parameters. Maxwell and others' electromagnetic equations are considered and show that they are consistent as mechanical equations.

It is interesting to consider further that the dimensionality of electric field E and shear viscosity η are the same. The question then is whether in electromagnetic equations (and suitably adjusted mechanical ones) the parameter E as observed or implemented already contains within it the shear viscosity of the background, or should that E be additionally adjusted by that viscosity? Or is E completely a viscosity that is imposed in addition to the background? These sort of questions will be considered in due course.

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