Electrostatic Repulsion and Aether Pressure

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Abstract. In earlier articles of this series, electrostatic repulsion has been associated with fine-grained centrifugal pressure in the linearly polarized electron-positron sea. Magnetic repulsion has also been associated with fine-grained centrifugal pressure in the magnetized electron-positron sea. There is however a major difference between the two cases. An increase in magnetization results in an increase in vorticity H, whereas an increase in linear polarization does not result in an increase in vorticity H.
This article takes a closer look at the linear polarization mechanism for rotating electron-positron dipoles and concludes that the internal opposing force involves a centrifugal aether pressure that is induced as a result of the electrons and the positrons coming closer together on average, along the line of action. [1]

The Polarization Mechanism

I. In 'The Cause of Centrifugal Force' at,

http://www.wbabin.net/science/tombe43.pdf

it was discussed how centrifugal force (codenamed G2 in this series) is caused by a build up of aether pressure that arises when gravity/negative charge sinks become congested and positive charge sources open wider. It was suggested that rotating aether causes sinks to become congested, and sources to open wider, and that this unleashes the inverse cube law repulsive force that is associated with positive charge. The more familiar mathematical expression for Centrifugal force is v²/r, where v is the mutual tangential

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speed and where r is the radial distance between the two particles. This indicates that centrifugal potential energy has a rotational/tangential kinetic energy aspect given by the numerator v^2. But if we eliminate this aspect using the Keplerian areal constant, we end up with an inverse cube law repulsive force. This reveals a deeper and more general nature to centrifugal force as being positive charge that is unleashed by rotation.

We will now investigate the cause of centrifugal force in the linear polarization mechanism. We want to make linear polarization a purely potential energy affair without involving changes in either rotational kinetic energy or vorticity **H**. However, in order to obtain the aether pressure/potential energy, we will need to increase the centrifugal force. So we will therefore need to find a way to increase centrifugal force without increasing the vorticity **H**.

The linear polarization of an electron-positron dipole will have the effect of causing the two individual orbital paths to move apart and intersect each other like two intersecting circles. In a single rotating dipole, this will have the effect of bringing the negative and positive particles closer together at the moment of closest approach. In the electric sea as a whole, this effect will cause all particles along the line of action to become closer to another particle at the extremities of their individual orbits along that line. As such the average separation distance between pairs of particles will be reduced. Using either the v^2/r expression or the inverse cube law expression for centrifugal force, we can see how linear polarization will induce an increase in the centrifugal repulsion force without involving any increase in rotational kinetic energy or vorticity **H**. This is the basis of Lenz's law as applied to electrostatics. Lenz's law is due to an increase in the fine-grained centrifugal force in the linearly polarized electron-positron dipoles. This induced centrifugal force opposes the applied electric field, and it is caused by the particles having a reduced effective average separation distance along the line of action.

The applied electric field which causes the linear polarization will act in one direction. However, the induced centrifugal repulsion which comes from the positrons will act in every direction in the equatorial plane. This means that as well as opposing the applied electric field, the induced increase in centrifugal repulsion will cause an increased pressure in every direction in the equatorial plane, and hence cause an increased force of repulsion to act laterally between the polarization field lines that are mutually aligned in

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their equatorial planes. Compare the situation with a free falling beaker of water. When the beaker is falling freely, there is no hydrostatic pressure gradient in the water. However, when the beaker of water is sitting stationary on the surface of the Earth, there will be a vertical hydrostatic pressure gradient. At any point in the water, this hydrostatic pressure will be acting equally in all directions.

If we have two gravitating bodies close together, the linear polarization field lines will spread outwards from each other. The pattern will look somewhat similar to that of two soft elastic balls that have been pushed together. But unlike in the case of the two soft elastic balls, the two gravitating bodies will mutually attract. This is because gravity is a weak force and the induced centrifugal repulsion in the field lines is not strong enough to override the attractive effect of the aether inflow.

The situation is different for vitreously and resinously charged bodies. In the case of vitreous charge, a positive electric current source will cause aether to flow into that body. This inflow will come from a single point of entry and so it will not be radial. As such, the aether will swirl amongst the particles of the body and cause an increase in the fine-grained vorticity. This will in turn congest the negative sinks and open the positive sources wider. Aether from the positive electric current and from the positive particles will then flow radially outwards from the body and into the surrounding electron-positron sea. This will cause linear polarization which will result in centrifugal aether pressure in the equatorial plane of the polarization field lines.

In the case of resinous charge, the situation is the opposite. Aether flows out of the body through a point, into an electric circuit, and leaves the body in a reduced state of fine-grained vorticity. This opens the negative sinks wider and congests the positive sources. Aether then flows into the body radially from the gravitational field. But it flows in at a faster rate than ordinary gravity, hence accounting for the belief that the electric field is stronger than the gravitational field, even though they are essentially the same thing. The radially inflowing aether linearly polarizes the surrounding electron-positron dipoles oppositely to that in the case of vitreous charge. And due to the fact that the inflow is at a faster rate than ordinary gravity, the induced centrifugal pressure in the polarized field lines will be greater. If it exceeds the reversal threshold, it will override the gravitational attractive effect.

In general, electric field lines that emerge radially from either a vitreously charged body or a resinously charged body must contain centrifugal aether pressure in the equatorial plane of the polarized electron-positron dipoles. When two like charged bodies (either vitreous or resinous) come close together, the fine-grained Coriolis force will ensure that the axes of these dipoles form solenoidal rings around a line that joins the two bodies. This is essentially a variation of Ampère's circuital law arising from the aether flow from or to the charged bodies. This means that the electric field lines between two resinously charged bodies or between two vitreously charged bodies will spread outwards from each other in such a way that there will be a lateral repulsion pressure acting between the field lines where the field lines from each body meet. This will push the two bodies apart just like in the case of two soft elastic balls that have been pushed together. In other words, electrostatic repulsion between two vitreously charged bodies or between two resinously charged bodies is due to pure aether pressure that arises from fine-grained centrifugal force in the electron-positron sea.

This repulsion is present even between two gravitationally charged bodies, but in the gravitational case the effect will be overridden by the aether inflow, hence giving rise to a very subtle net force of mutual attraction. If large scale mutual tangential speed occurs between the two large bodies, this will increase the centrifugal pressure at the shear lines in the electron-positron sea where the two gravitational fields meet and hence reduce the attractive effect. This is the basis of planetary orbits.

When a vitreously charged body is brought close to a resinously charged body, the opposite polarizations of the electric sea surrounding each body causes the electric field lines to join directly between the two bodies. The aether then flows from the vitreously charged body to the resinously charged body. This will cause an attraction or a repulsion depending on which of the two bodies is the more strongly charged.

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The Importance of Centrifugal Force

II. The existence of centrifugal force is denied in modern science despite the fact that its existence is unequivocally proved by virtue of the effects of absolute rotation. Centrifugal force (G2) is a radial expansion which occurs when mutual tangential motion occurs. Aether hydrodynamics points us to four forces of which centrifugal force is one of these. In recent articles, a fifth force (G5) has been mentioned in relation to pure aether pressure or pure aether tension. However in practice we would be hard pushed to find an example of (G5) that was not ultimately sourced in either the inflow/outflow (G1) force, or the centrifugal force (G2) which is in turn rooted in (G1). Practically all cases of mutual repulsion that are observed in everyday life are ultimately sourced in the (G2) centrifugal force. Contact pressures are the consequence of the inter-atomic repulsive force which is almost certainly centrifugal in nature as a consequence of the atomic orbitals. The theory of flight ultimately depends on contact between the air molecules and the wing. Magnetic repulsion is due to centrifugal force acting in the equatorial plane between the electron-positron dipoles of the electric sea. Indeed, these electron-positron dipoles are the embodiment of centrifugal force. They are the DNA of centrifugal force, since all cases of centrifugal force are ultimately rooted in actions on the fine-grain level between neighbouring electron-positron dipoles. These dipoles are Maxwell's molecular vortices. Maxwell conceived of his molecular vortices on the very basis that centrifugal force in the equatorial plane of these vortices would be the cause of mutual repulsion between like magnetic poles. Centrifugal force is a mutually repulsive force that acts in tandem with the attractive force that is associated with aether inflow, and it leads to an equilibrium node. We witness this partnership on many scales. The associated graph at figure 1 below is common to both inter-atomic forces and planetary orbits. It is the entire basis of physical stability. For planetary orbits, this graph is obtained by using Kepler's law of areal velocity to eliminate the velocity term in centrifugal force.
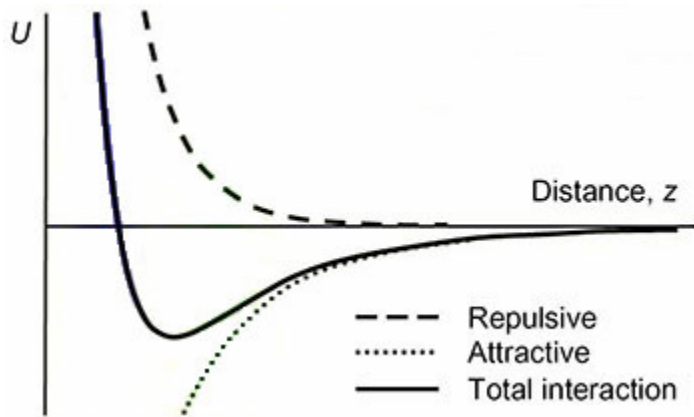
Figure 1. The inter-atomic force and planetary orbital force graph. This graph undoubtedly illustrates Boscovich's force law.

We can even witness centrifugal potential energy when we rotate a bucket of water. The water rises up at the edges of the bucket. But despite all of this, centrifugal force in modern science has been wrongly relegated to an illusion which is only ever observed from rotating frames of reference. And to make matters worse, some modern applied mathematicians have even extrapolated the formula for centrifugal force to apply to objects that are stationary but which are being observed from a rotating frame of reference. And in order to justify the lack of any centrifugal acceleration on such a stationary object, they have claimed that the centrifugal force is being overridden by a radial Coriolis force that is twice as strong. This is despite the fact that no Coriolis force exists in the absence of vorticity unless a radial motion is constrained to rotate. And even then, the Coriolis force would only be in the tangential direction. And even if such an inward radial Coriolis force did exist that was twice as strong as the supposed outward radial centrifugal force, then the net result would not be the artifact circular motion that is observed when a stationary object is viewed from a rotating frame of reference. The result would be a net radial motion towards the origin.

There are some very serious misunderstandings regarding centrifugal force circulating amongst modern physicists and applied mathematicians. The modern planetary orbital equation still contains the centrifugal force term, but it is treated as being merely a component of the radial acceleration, and the name is usually played down.

The Centrifugal Force and the Background Stars

III. For centrifugal force to be invoked, we need to have an absolute rotation that is normally measured relative to the background stars. We also need to have positive charge. This then opens up the question regarding what physical role the background stars actually play in the induction of centrifugal force. In the paper entitled 'Aether causes anti-Friction in the Planetary Orbits' at,

http://www.wbabin.net/science/tombe21.pdf

it was discussed how the centrifugal force acting between mutually orbiting planets is actually occurring on the picoscopic scale in the shear lines of the electron-positron sea where the two gravitational fields meet, and that this induces a hovercraft effect and hence avoids friction in space. This would suggest that for the purposes of the mutual tangential speed that is required to induce centrifugal force, the necessary physical interaction is with the background electron-positron sea and not with the background stars.

Ian Montgomery in Australia advocates his own version of a luminiferous medium that is composed of electron-positron couplets. He has expressed his belief that this electron-positron medium is in fact the basis of an absolute reference frame and that the background stars are too far away to have any physical effect locally.

If we were to remove the background stars, the Earth could still have tangential motion by reference to the electron-positron dipoles at the interface where the Sun's gravity gives way to the Earth's gravity. Since the Sun's magnetosphere doesn't appear to move very much with respect to the background stars, and since there are no discernable effects detected as a result of the Earth's orbital motion within the Sun's magnetosphere, then when we are measuring motion relative to the background stars, the physically interactive medium in question is actually the electron-positron sea.

Two electrons in mutual tangential motion could never experience centrifugal force. They would merely spiral inwards towards each other. Two positrons will experience a mutual repulsive force due to their positive charge. No additional centrifugal repulsion would occur if they were to move in mutual tangential motion.

Gyroscopic Electromagnetic Radiation

IV. It has been discussed in 'Cathode Rays, Gravity, and Electromagnetic Radiation' at,

how electromagnetic radiation involves a net coherent flow of aether which swirls from vortex to vortex, angularly accelerating while sinking down into the electron sinks and emerging from the positron sources. It is a bit like the sinusoidal motion of a fish which keeps leaping in and out of the water as it swims along. We do not however know if the aether that emerges from a positron is the same aether that is consumed by an electron closely behind it along the line of propagation. At any rate, the explanation given in that article for electromagnetic radiation was only in relation to an example in which the radiation moved through the equatorial plane of the electron-positron sea.

What about if we had a stream of light photons that are propagating through a magnetic field in the axial direction? What kind of isotropy would allow for a similar explanation for the propagation of a pulse of aether along the double helix axis of a magnetic field line? We might say that it is merely a question of superimposition of effects. But it would be better if we could explain the mechanism exactly in relation to light which flows along the double helix axis of a magnetic line of force (see figure 1). The same situation applies to electromagnetic radiation which emerges from a rotating bar magnet.
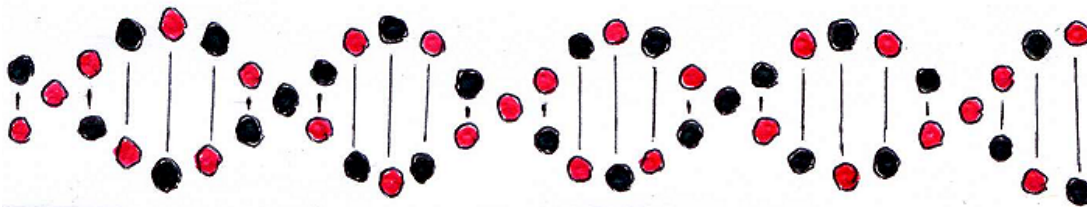
Figure 1. A close-up view of a single magnetic line of force. The electrons are shown in red and the positrons are shown in black. The double helix is rotating about its axis with a prodigious angular speed and the rotation axis represents the magnetic field vector H. The diagram is not to scale as the relative dimensions remain unknown.

Let us begin with a pulse of pressurized aether impinging on one side of a rotating electron-positron dipole within a double helix magnetic line of force. The direction of approach is parallel to the rotation axis. The pressure will cause a forward momentum on that part of the dipole. Just like in the equatorial case, angular acceleration will occur. This will be in keeping with the electromagnetic wave equation. But this time it will not be angular acceleration such as to make the vorticity and the angular speed increase. It will be an angular acceleration which makes the dipole precess.

Centrifugal aether pressure will still be induced on the far side of the dipole, just as in the equatorial case. But this time, the basis for the induction of the centrifugal aether pressure will not be due to an increase in mutual tangential speed. It will be due to the fact that one edge of the dipole will be made to come closer to the next dipole along the line of propagation. A spiraling pulse of precession will propagate along the double helix, which should cause a rotation in the plane of polarized light. This is observed in the Faraday Effect.

Summary

V. Centrifugal force lies at the root of magnetic repulsion and electrostatic repulsion. It also causes the angular $\partial\mathbf{A}/\partial t$ force (G4) in time varying electromagnetic induction and in electromagnetic radiation. We might expect that the tangential $\partial\mathbf{A}/\partial t$ force should refer to angularly accelerating aether. However, angularly accelerating aether is not a naturally occurring phenomenon, and the term $\partial\mathbf{A}/\partial t$ in the Lorentz force refers to the angular acceleration of a particle as caused by the +grad($\mathbf{A}.\mathbf{v}$) centrifugal force. Centrifugal force is also involved in the rattleback. The rotation of this asymmetrical shape induces a centrifugal pressure which invokes the Coriolis force and hence the reversal torque. Centrifugal force is ultimately caused by the inverse cube law aether outflow (G1) force.

The Coriolis force (G3) lies at the root of the convective aspect of electromagnetic induction ($\mathbf{E} = \mathbf{v}X\mathbf{H}$), and Ampère's circuital law. It also explains why spinning gyroscopes don't topple. It is usually involved at some level, anywhere where vorticity is observed.

Aether tension causes gravity, magnetic attraction, and electrostatic attraction. This tension is caused by aether flowing into negative sinks. It is the inverse square law (G1) attractive force. The cause of (G1), whether in the case of inflow tension or outflow pressure, is hidden beyond the sinks and sources.

Notes

[1] This article supersedes 'Gravity Reversal and Atomic Bonding' at,

http://www.wbabin.net/science/tombe6.pdf

In 'Gravity Reversal and Atomic Bonding' we needed to find a mechanism that would account for repulsion between polarized electric field lines in the electron-positron sea. Centrifugal force was considered to be the obvious choice based on Maxwell's model for magnetic repulsion. Centrifugal pressure could explain the mutual repulsion between electron-positron dipoles in their mutual equatorial planes, but we further needed to establish a link between increasing the degree of linear polarization and obtaining an increase in the resulting centrifugal pressure.

This immediately created the problem of how to increase the centrifugal pressure without increasing the vorticity. This problem was not satisfactorily resolved in 'Gravity Reversal and Atomic Bonding'.