

# The Aether in Rigid Body Collisions

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**Abstract. During a collision, momentum is always conserved. The large scale kinetic energy on the other hand, may or may not be conserved.**

**When kinetic energy on the large scale is conserved during a collision, we say that the situation is matched. It will be concluded that a matched collision involves only a large scale pulse of aether with a prodigious speed that is many orders of magnitude greater than the speed of light, and maybe even instantaneous. An unmatched collision on the other hand will involve both a large scale aether pulse as well as a microscopic particle compression wave with a finite speed in the order of the speed of sound.**

**This aether pulse, which we will call a vitreous pulse, is a compression wave of aether involving an actual net aether flow that moves through a rigid body and causes large scale acceleration. This large scale acceleration is due to an aethereal force which we will call G5.**

## The Four Fundamental G Forces

I. We saw in section III of ‘Gravitation and the Gyroscopic Force’ at,

<http://www.wbabin.net/science/tombe5.pdf>

how aether hydrodynamics points to four fundamental forces. Let us take a closer look at these four forces.

**G1** is the force that is associated with radial irrotational aether flow into sinks and out of sources. It is the force that is associated with gravitation, magnetic attraction, electrostatic attraction, and also with electrostatic repulsion where pure positive charge is involved. This effect implies the existence of unseen forces that cause the aether to flow out of point sources and into point sinks.

**G2** is centrifugal force. It is associated with repulsion. It is the cause of the outward radial force in planetary orbital theory, and it is the force that is associated with magnetic repulsion. It is also the cause of electrostatic repulsion in cases involving vitreous and resinous charge. **G2** is the force that causes inertia in the local Cartesian frame of reference, and which hence causes Newton's 1<sup>st</sup> law of motion. The **G1** repulsive force underlies the **G2** force. The **G2** force is induced by rotation, which widens the positron sources in the electron-positron dipoles.

**G3** is the Coriolis force. The **G3** force is the right angle deflection that is encountered at a centrifugal pressure barrier. It prevents a pivoted precessing gyroscope from toppling over, it causes the reversal torque in a rattleback, and it is also involved in the  $\mathbf{v} \times \mathbf{H}$  force of electromagnetic induction. [1]

**G4** is the angular  $\partial \mathbf{A} / \partial t$  force. It can be seen as a tangential component of gravity in non-circular orbits. It is also associated with electromagnetic induction, but it has been suggested in 'Fundamental Torque and the Rattleback' at,

<http://www.wbabin.net/science/tombe37.pdf>

and also in 'Electrostatic Repulsion and Aether Pressure' at,

<http://www.wbabin.net/science/tombe44.pdf>

that it is actually the **G2** force that underlies the  $\partial \mathbf{A} / \partial t$  term in electromagnetic induction.

## The Scalar and Vector Potentials

II. Equation (77) in Maxwell's 1861 paper 'On Physical Lines of Force',

[http://vacuum-physics.com/Maxwell/maxwell\\_oplf.pdf](http://vacuum-physics.com/Maxwell/maxwell_oplf.pdf)

which is known nowadays as the Lorentz force, contains the terms  $\text{grad}\psi$  and  $\partial\mathbf{A}/\partial t$ .

Maxwell identified the vector potential  $\mathbf{A}$  with momentum and he believed that it corresponded to Faraday's *electro-tonic* state. In previous articles,  $\mathbf{A}$  has been referred to as a vector closely related to aether field velocity. When considering the weighting for aether density, Maxwell's idea that  $\mathbf{A}$  is a momentum is perhaps somewhat more accurate.

Regarding the scalar potential term  $\psi$ , Maxwell states that "*The physical interpretation of  $\psi$  is, that it is the electric tension at each point in space*".

Maxwell went on to derive a particular solution for  $\text{grad}\psi$  at equation (127). It came out as Coulomb's inverse square law of electrostatics, with electric charge defined as the density of 'free electricity'. However he derived this solution on the basis of the existence of regions of zero free electricity. The correct solution may indeed be more subtle and also allow for the inverse cube law repulsive force of aether outflow pressure, and hence the **G2** centrifugal force.

In general we will have a force associated with aether pressure or aether tension given by the equation,

$$\text{grad}\psi = \partial\mathbf{A}/\partial t \quad \text{(The Aethereal Induction Equation)} \quad (118)$$

The equation,

$$\text{div } \mathbf{A} = \partial\psi/\partial t \quad \text{(The Equation of Continuity)} \quad (113)$$

is the equation of continuity because  $\mathbf{A}$  is the same thing as electric current and  $\psi$  is effectively the same thing as electric charge since charge and potential are both measures of the pressure or the tension in the aether. If we combine equation (118) with equation (113) we obtain an aether wave equation,

$$\nabla^2\psi = \partial^2\psi/\partial t^2 \quad \text{(The Aether Wave Equation)} \quad (\text{A})$$

which doesn't specify a propagation speed.

## The Lorenz Gauge

**III.** The Lorenz gauge is the equation of continuity (113) above with the speed of light arbitrarily incorporated. Maxwell naturally disapproved of the Lorenz gauge because it was a clear cut case of cooking the books. We don't know what speed compression pulses travel at through the aether. Maxwell avoided this problem by carefully eliminating the Gauss's law force when he first derived the electromagnetic wave equation in part VI of his 1865 paper 'A Dynamical Theory of the Electromagnetic Field'. See page 497 (page 9 of the pdf file) at,

[http://www.zpenergy.com/downloads/Maxwell\\_1864\\_4.pdf](http://www.zpenergy.com/downloads/Maxwell_1864_4.pdf)

The speed of light which Maxwell obtained for the electromagnetic wave equation applies specifically to the propagation of angular acceleration through the molecular vortices as described by the magnetic **H** vector. This is a fine-grained vortex wave effect of finite speed, and it tells us nothing about the actual speed of pure compression pulses in the aether itself.

There is a tendency for people to try and understand collisions between rigid bodies in terms of inter-molecular compression waves travelling at finite speeds of the order of the speed of sound for the material in question. However, such inter-molecular waves inside a rigid body cannot on any account explain large scale motion of the body as a whole.

A rigid body collision involves an aethereal compression pulse which acts to cause acceleration on the large scale. This pulse travels through suitable conducting media at an unknown speed which is prodigious if not infinite. This pulse can cause large scale acceleration.

**G5** will be used to refer to the grad $\psi$  force for general situations that involve aether pressure and large scale kinetic energy.

## Mechanical Matching

**IV.** Consider a row of metal balls of equal size and weight, all touching each other as is the case in the Newton's cradle. If we cause another similar ball to collide into the row at one end, it stops still abruptly and another ball accelerates away at the far end with a final momentum and a

final kinetic energy equal to what the first ball had just prior to the collision. The situation is said to be matched.

Newton's 3<sup>rd</sup> law of motion appears to have been defied at the impact point because no reaction appears to have taken place at that point, unlike what would have occurred if the row of balls had all been soldered together. The incoming ball stops still, and another ball moves on at the end of the row. It is almost as if the incoming ball was carrying a spirit that departs from it on impact, passes through the row of balls, and enters the outgoing ball at the far end, carrying it away. There was an element of knowingness of the fact that the balls weren't all soldered together.

We need to enquire into how Newton's 3<sup>rd</sup> law of motion seems to be defied at the initial impact point. We will assume that the incoming ball is halted by a mutual intermolecular repulsive force. Why did the entire row of balls not move off together in line with Newton's 3<sup>rd</sup> law of motion at the time of the impact?

We must look to the connection between kinetic energy and centrifugal pressure. Planetary orbital theory is based on the interplay between the two irrotational forces **G1** and **G2**. There is a cyclic alternation between gravitational potential energy and kinetic energy. Gravitational potential energy is a tension. When an object accelerates through the electron-positron sea, there will be a build up of centrifugal aether pressure in front of its direction of motion, in the shear line where its gravitational field gives way to the neighbouring gravitational field. This accumulated centrifugal aether pressure is in fact the essence of kinetic energy.

When the incoming metal ball in the Newton's cradle collides with the row, the accumulated aether pressure in front of it will continue on through the row of balls to the far end, with the row of balls acting as a conducting medium as like the wire of an electric circuit. The incoming ball will lose its centrifugal charge (kinetic energy) and remain at rest at the beginning of the row. The ball at the other end of the row will absorb the excess aether and a **G5** force will be induced according to the equation,

$$\text{grad}\psi = \partial\mathbf{A}/\partial t \quad (\text{The Aethereal Induction Equation}) \quad (118)$$

Newton's 3<sup>rd</sup> law of motion will not have been defied because the force will simply have been transmitted at-a-distance, probably instantaneously, to the far end of the row by the vitreous aether pulse.

This vitreous pulse will have actually carried a net amount of aether from the incoming ball to the outgoing ball.

If we were now to solder the two end balls together and repeat the above experiment, it would be impossible for the situation to allow for conservation of kinetic energy on the large scale, because the situation will now be unmatched. When the vitreous pulse arrives inside the end ball, that ball will start to move away. However, because it is soldered to its neighbour, it will pull its neighbour with it by the intermolecular attractive **G1** bonds. This pull effect will result in the newly arrived aethereal energy being split between the large scale translational motion and the microscopic internal motions of the molecules. Energy will hence not be conserved as viewed on the large scale.

### **Pushing a Long Rigid Pole**

V. Collision forces in general will involve both the large scale vitreous pulse and microscopic particle level elasticity working together in tandem. Consider a row of metal balls joined together by springs and resting on a horizontal surface. The variables will be mass, surface friction, air resistance, and spring constant. If we push the ball at one end, the entire row will engage in two independent motions. There will be a motion of the entire row on the large scale, and also an internal wave motion with finite propagation speed depending on the above variables. The motion will be divided between large scale 'slide' and internal compression and rarefaction waves. The relative degree of each motion will depend on the values of the variables mentioned above. At any rate, the internal wave motion will have a finite speed, but the large scale motion of the entire row will be transmitted either instantly to every point or at the indeterminate prodigious speed associated with pure aether pulses.

An extreme case of this scenario is if we were to push the end of a long rigid pole. The far end of the pole will move at exactly the same time as the contact end moves. This implies that the push involves direct aether compression. We can therefore conclude that a net transfer of aether occurs every time that a large body causes another large body to move by contact force.

It is a common mistake to link the large scale motion of a rigid body to the speed of the internal particle compression waves. This mistake is in

large part due to the inability of people to accept the concept of action-at-a-distance. The Lorenz gauge is an example of fudging due to inability to accept the concept of action-at-a-distance. But there is no manner in which the internal molecular vibration waves in a rigid body can suddenly translate into motion on the large scale on reaching one end of a rigid body.

## **Analogy with Electric Current**

**VI.** The mechanical scenario above has got an analogy with electric current. The action-at-a-distance aethereal effect is similar to electric current, which is a flow of aether through a wire. This aethereal electric current can instantly perceive the path of least resistance. It will initially leak sideways from the wire and arc through the electric sea [2] to the return limb of the circuit. This will cause linear polarization which will impede the flow. The aether will then flow wide of the polarized region. This will continue until the region of electric sea enclosed by the wire is totally polarized, in which case, the electric current will then be confined to the wire itself. See ‘Electrical Arcing and Action-at-a-Distance’ at,

<http://www.wbabin.net/science/tombe27.pdf>

The linear polarization effect constitutes near field radiation. It will propagate in the space between the outward and return wire of the circuit in the form of a transverse electro-polarization (TEP) wave, and it will propagate with a finite speed.

A rectangular TEP wave propagating in the space between the two wires of an electric circuit is an example of a situation that involves both large scale motion of aethereal kinetic energy, and fine grain elastic wave motion of the electric particles of the electric sea. It is an electrical analogy to the sliding row of metal balls that are joined together with springs.

The turns ratio of the coils in an AC transformer will decide the split ratio between the magnitude of the pure aethereal electric current in the wire one the one hand, and the magnitude of the elastic displacement current in the TEP wave on the other hand. The former is the large scale kinetic energy current which uses the symbol  $I$ , whereas the latter is considered to be voltage or tension which uses the symbol  $V$ .

## Electromagnetic Radiation

**VII.** Electromagnetic radiation involves fine-grained aether pressure pulses between neighbouring electron-positron dipoles in the electric sea. These pulses involve a net transfer of aether momentum, and they cause a mutual torque to act between two neighbouring dipoles. This mutual torque induces an angular deceleration in the first dipole, which the aether pulse is leaving, and an angular acceleration in the second dipole, which the aether pulse is entering into. The angular acceleration then causes more aether to be generated from the positron in the second dipole. The aether that enters into the second dipole from the first dipole pushes that newly generated aether out towards the third dipole, and the cycle is repeated. The second dipole angularly decelerates and the aether which entered it from the first dipole is then consumed by the electron. See ‘Tangential Force – The Equilibrium Shifter’ at,

<http://www.wbabin.net/science/tombe54.pdf>

This effect is of such a high precision that the point of action on the circumference of a rotating dipole is crucial. Hence many electromagnetic wave pulses from many directions can be travelling through a dipole at any given time. The electric sea becomes a kind of digital space which is transmitting an infinite number of aether pressures in specific directions at any point. And the propagations are not only in the equatorial plane of the electron-positron dipoles. When propagations occur in the axial plane of a row of electron-positron dipoles, the angular acceleration takes on the form of a precession, and the centrifugal pressure is induced by virtue of the distance between the point of action on the circumference of neighbouring dipoles being caused to reduce. These axial electromagnetic pulses will spiral along a double helix magnetic line of force, hence causing the plane of polarization to rotate.

## References

[1] The **G3** force may have played a role in the reversals of the Earth’s magnetic field if such reversals ever did occur. This would assume that the Earth’s magnetic field is caused by the rotation of the Earth and later embedded ferromagnetically into the iron core. If for whatever reason the Earth had ever experienced a cataclysmic event such as being struck by a large celestial object, this would have altered the Earth’s axis of



symmetry. A **G3** force would then have been induced and the Earth would have experienced a torque that may have re-aligned it in relation to its space-fixed axis of rotation. This in turn would have put the ferromagnetic alignment out of synchronization with the rotation axis and a new ferromagnetic alignment would have commenced.

[2] The electric sea is a solenoidally aligned solid of rotating electron-positron dipoles that permeates throughout all space and acts as the luminiferous medium. Electromagnetic waves are propagations of angular acceleration through the rotating electron-positron dipoles and they have a finite speed which can be measured and calculated from theory. Electromagnetic waves should not be confused with either TEP waves or with large scale aether compression pulses in the Newton's cradle. Since TEP waves propagate in the same medium as electromagnetic waves, they may well travel at a speed which is in the order of the speed of light, but there is no theory which directly suggests that this should necessarily be so.