Electrical Arcing and Action-at-a-Distance

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7th December 2007, Philippine Islands
(15th January 2008 Amendment)

Abstract. When the switch of an electric circuit is turned on, the immediate effect is that the pressurized aether from the power source arcs across the shortest gap from the output terminal to the return terminal. An electric circuit is instantaneously created and this begins the process of polarizing the electron-positron dipoles in that immediate region. As the dipoles become polarized, their opposing internal electric fields will impede further aether flow and so the aether will start to flow wide of that impeded region.

This effect progresses wider and wider until the entire region enclosed within the electric wire is polarized, and the current is actually flowing totally within the wire.

This article discusses the speed at which the linear polarization effect moves through the space enclosed within the circuit wire.

Polarization and Magnetization

I. It is important to distinguish between polarization (mechanical spring) and magnetization (mechanical fly-wheel). An electron-positron dipole can be made to spin faster by the action of a tangential force. When this occurs, we are dealing with electromagnetism and we can link this phenomenon with the speed of light.

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However, when we apply a radial force to an electron-positron dipole, it becomes linearly stretched and we say that it has become polarized. Since the curl of a radial force is zero, we have no way of theoretically connecting linear polarization with the speed of light.

Three Modes of Electric Current

II. In the abstract above it was explained how the aethereal electric circuit expands in the space enclosed within the wire until the whole region is linearly polarized and the electric current is exclusively confined to the electric wire. If we have an LR circuit the aether will continue to flow in the wire, whereas if we have a CR circuit the aether flow will grind to a halt.

One conclusion that can be drawn by comparing these two kinds of circuits is that the charge carriers in the conducting wire are dielectric and that they only become polarized and hence impede aether flow when they are blocked from moving translationally, as is the case when the circuit is broken. The situation would be comparable to a spring lying horizontally on a frictionless surface. If we push the spring it will slide along in translational motion. However if the spring is blocked from moving and we then push it, it will compress and oppose the applied force. A closed electrical conducting circuit would be comparable to the former scenario and a dielectric or a capacitor circuit would be comparable to the latter scenario.

Electric current is primarily the flow of pure aether. The aether is a dynamical and compressible fluid which equates to the vitreous electric fluid described by Du Fay in 1733. Electric current can loosely be compared to the flow of a compressible gas in a perforated pipe.

When an electron-positron dipole finds itself in the path of an accelerated flow of aether it will either move translationally or stretch.

(i)   If the dipole is in a closed circuit of conducting material in which it is free to move translationally as is the case in an LR circuit, then the electric current will involve a steady flow of dipoles. In this situation, the surrounding electron-positron sea will serve to control the leakage.

(ii)   If the dipole is in an insulator or a broken conducting circuit as is the case in a CR circuit, then the dipole will linearly polarize

(stretch) and produce a back EMF which will impede the aether flow. In this situation, leakage will be controlled by the fact that the dipoles in the circuit will have a much greater capacity for aether absorption than the dipoles in the surrounding electron-positron sea.

(iii)   If the dipole sits to the side of a circuit wire, it will experience a tangential force $-\partial\mathbf{A}/\partial t$ which will cause it to spin faster and hence give rise to a magnetic field.

The Capacitor Circuit

III. Because a capacitor circuit is open ended, we might expect the polarization expansion wave that was mentioned in the abstract to reflect backwards again when it reaches the open end at the capacitor plates. The capacitor equation Q = CV does indeed contribute an oscillatory aspect to the charging procedure. Q = CV is essentially a variety of Maxwell's fifth equation which in turn is the equation for simple harmonic motion. See 'E=mc² and Maxwell's Fifth Equation' at,

http://www.wbabin.net/science/tombe14.pdf

In conjunction with this wave reflection mechanism, the aether will compress into one of the capacitor plates and rarefy in the other. The transverse polarization wave will continue to reflect back and forth through the space enclosed by the circuit even after the capacitor is fully charged. This oscillatory behaviour in direct current capacitor circuits (DC CR circuits) has been noted by Ivor Catt. See,

http://www.ivorcatt.org/icrwiworld78dec1.htm

and also by Harry Ricker. See 'The Symmetry Group of Electromagnetic Wave Reflections on Transmission Lines' at,

http://www.wbabin.net/science/ricker33.pdf

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The Electropolarization Wave

IV. The propagated effect between the two wires of an electric circuit is sufficiently different in nature from an electromagnetic wave to allow it to be classified as a different, albeit a closely related phenomenon. It is in fact an electropolarization wave.

The electromagnetic wave is the propagation of angular accelerations from electron-positron dipole to electron-positron dipole through the electric sea and it doesn't need a cable. The speed of light is connected to the root mean square of the circumferential speed of the rotating electron-positron dipoles.

The electropolarization wave on the other hand progresses between two wires as it is fed by aether coming sideways from the outward current wire. Aether flowing along the outward wire arcs sideways. Polarization of the dipoles in the dielectric space gives rise to an impedance. The aether then moves further up a bit and arcs sideways again. This process is ongoing until the entire region between the wires is polarized.

The electric current itself is clearly an instantaneous action-at-a-distance phenomenon. This follows directly from Gauss's law. However the electropolarization wave should clearly have a finite speed.

This speed is commonly believed to be the speed of light but I have so far seen no theoretical basis for extrapolating the speed of light from the electromagnetic wave equation into this particular scenario.

If the speed of a signal along a transmission line can indeed be shown conclusively by experiment to be equal to the speed of light, then this should provide us with important information that would help us to determine the finer details of linear polarization.

It might well be suggested that Kirchhoff 's 1857 telegraphy equation was the necessary theoretical proof that a signal propagates along a wire at the speed of light. However if we make a closer examination of that proof which can be viewed at,

http://www.ifi.unicamp.br/~assis/Apeiron-V19-p19-25(1994).pdf

then we can see that Kirchhoff merely used the equations of electromagnetism. Kirchhoff simply derived the electromagnetic wave

equation without realizing it. Although he didn't know about Maxwell's displacement current, he used Poisson's equation and the equation of continuity of charge which are mathematically equivalent.