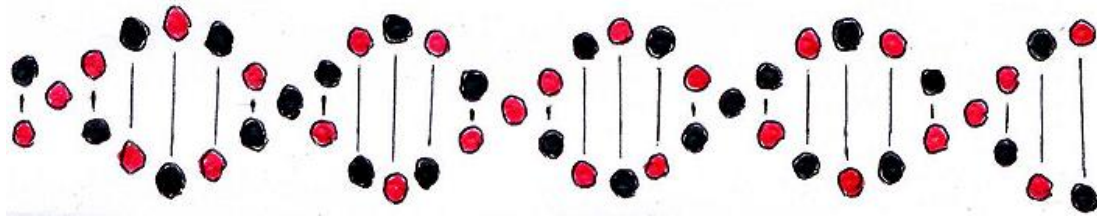


The Absolute Direction of Alternating Current

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The Mystery

I. Electric energy that is generated at a power station flows in one direction only, away from the station and to the consumer, yet, at both the generator end and at the consumer end, the electric current itself alternates to-and-fro. How can this be possible? We will now take a closer look at the transient state that arises in an electric circuit during the first moments after the power is connected, or after each moment of direction reversal in the case of AC. It's only in the transient state that transmission occurs, whether it be wireless transmission or cable transmission.

The Transient State

II. It is proposed that electric current is actually an aethereal fluid, faster and more subtle than charged particles, made from the stuff of the electrostatic fields that surround such particles, and which flows into and out of them, according to whether they are negatively or positively charged. A pulse of electricity in a wire will leak sideways creating a toroidal magnetic field around it.

When the power is first connected to a laboratory electric circuit, it takes a few brief moments before the electric current fully occupies the conducting wires. During this *transient state*, what begins as a tiny electric circulation at the two terminals, expands outwards between the wires, with part of this circulation, known as displacement current, leaking across the dielectric gap. It's only in the *saturated state*, as in

when the current is fully immersed inside the conducting wires, that energy flows in earnest back to the return terminal.

In the case of a laboratory AC circuit, where the current direction cyclically alternates, the proportion of the time during each cycle when the transient state is significant, will depend on the AC frequency. The higher the frequency, the more significant the transient state will be. In the case of a transmission line however, due to the distance which the current must travel, the saturated state may never be reached, even in the case of lower frequencies in the 50 or 60 Hz range. When we are dealing with DC, the saturated state is known as the *steady state*.

Consider an overhead cross-country AC power transmission line in which the energy is flowing from east to west. During one half of the AC cycle, an observer at a fixed point under this power line will see the current flowing in a westerly direction. The observer, however, will observe no backwash, and no return wires are involved.

The Electric Fluid

III. We know from electrolysis that when an electric current is flowing, positive ions move in one direction while negative ions move in the other. However, for the purpose of transferring energy and generating the surrounding magnetic field, there really needs to be an absolute physical direction for electric current, dictated by a more fundamental undercurrent.

It was proposed in the section above that there exists a fundamental electric fluid which pervades all the universe. Everything is made from this fluid, which is the aether, and in the eighteenth century, the younger John Bernoulli suggested that throughout all space, it is rendered into tiny vortices that press against each other with centrifugal force while striving to dilate, hence accounting for some optical phenomena, [1]. In the next century, in the year 1861, in his paper "*On Physical Lines of Force*", James Clerk Maxwell showed that this sea of aether vortices serves as the medium responsible for both optical and electromagnetic phenomena, [2], and meanwhile, based on observing a rattleback reversing its direction of rotation, it is almost certainly also the medium responsible for inertial phenomena, [3]. Nikola Tesla gives further insight into the nature of the aether in a 1907 article entitled, "*Man's Greatest Achievement*", [4].

It is further proposed that negatively charged particles constitute sinks in the aether while positively charged particles constitute sources, and that electric current is a flow of pure aether which imparts its acceleration to charged particles so that it will push positively charged particles in the same direction while negatively charged particles eat their

way in the opposite direction towards the aether source. While the typical speed of aether flow from source to sink is in the order of the speed of light, the charged particles that get involved with electric current are never accelerated to speeds anywhere near this. Electrical resistance in conducting wires ensures that the drift velocities of charged particles are nowhere near the speed of light, but it's important to understand that these charged particles are not the primary essence of electric current.

Electric Current Crossing the Gap

IV. According to the "*The Double Helix Theory of the Magnetic Field*", [5], [6], [7], space is a dielectric. When the power is first connected to an electric circuit, the electric fluid emerging from the outward terminal crosses the dielectric gap, forming a closed electric circulation back to the return terminal. As this aether crosses the gap, it would induce dielectric polarization, but since the current is flowing at close to the speed of light, it actually induces a magnetic field around the current in the wire. This magnetic field impedes further leakage. But since the electric circulation is expanding under pressure, the aether fluid simply sweeps wide of this magnetic field impedance as it progresses outwards from the power source, while the magnetic field propagates with it alongside the conducting wire.

Conclusion

V. In order for alternating electric current, (AC), to be transported in a single direction across country from the power station to the consumer, it is easier to understand the principle in the context of single-phase transmission. It is proposed that electric current is an aethereal fluid which emerges under pressure from one terminal at the power source, at a much greater rate than it returns under tension at the other terminal. The electricity that propagates outwards on each wire during each half-cycle, never returns. It disconnects from the power source, hence escaping and advancing on its own momentum along the power line. No return wire is necessary.

On the Planck scale, where the propagating aethereal electric circulations constitute wireless radiation through the all-pervading sea of rotating electron-positron vortices, [9], the propagation speed is that well-known speed associated with light. In the case of guided transmission line pulses however, the circulation speed, and hence the propagation speed, while in the same order of magnitude as the speed of light, will likely be

somewhat less. See **Appendix I** regarding variation of transmission line speed in connection with Bernoulli's Principle.

References

- [1] Whittaker, E.T., "***A History of the Theories of Aether and Electricity***", Chapter 4, pages 100-102, (1910)
"All space, according to the younger Bernoulli, is permeated by a fluid aether, containing an immense number of excessively small whirlpools. The elasticity which the aether appears to possess, and in virtue of which it is able to transmit vibrations, is really due to the presence of these whirlpools; for, owing to centrifugal force, each whirlpool is continually striving to dilate, and so presses against the neighbouring whirlpool."
- [2] Maxwell, J.C., "***On Physical Lines of Force***", Philosophical Magazine, Volume XXI, Fourth Series, London, (1861)
http://vacuum-physics.com/Maxwell/maxwell_oplf.pdf
- [3] Tombe, F.D., "***The Rattleback and the Magnus Force***" (2022)
https://www.researchgate.net/publication/361277369_The_Rattleback_and_the_Magnus_Force
- [4] O'Neill, John J., "***PRODIGAL GENIUS, Biography of Nikola Tesla***", Long Island, New York, 15th July 1944, Fourth Part, paragraph 23, quoting Tesla from his 1907 paper "***Man's Greatest Achievement***" which was published in 1930 in the Milwaukee Sentinel,
"Long ago he (mankind) recognized that all perceptible matter comes from a primary substance, of a tenuity beyond conception and filling all space - the Akasha or luminiferous ether - which is acted upon by the life-giving Prana or creative force, calling into existence, in never ending cycles, all things and phenomena. The primary substance, thrown into infinitesimal whirls of prodigious velocity, becomes gross matter; the force subsiding, the motion ceases and matter disappears, reverting to the primary substance".
<http://www.rastko.rs/istorija/tesla/oniell-tesla.html>
<http://www.ascension-research.org/tesla.html>
- [5] Tombe, F.D., "***The Double Helix Theory of the Magnetic Field***" (2006)
Galilean Electrodynamics, Volume 24, Number 2, p.34, (March/April 2013)
https://www.researchgate.net/publication/295010637_The_Double_Helix_Theory_of_the_Magnetic_Field
- [6] Tombe, F.D., "***The Double Helix and the Electron-Positron Aether***" (2017)
https://www.researchgate.net/publication/319914395_The_Double_Helix_and_the_Electron-Positron_Aether
- [7] Tombe, F.D., "***The Positronium Orbit in the Electron-Positron Sea***" (2020)
https://www.researchgate.net/publication/338816847_The_Positronium_Orbit_in_the_Electron-Positron_Sea

[8] Tombe, F.D., “*Wireless Radiation Beyond the Near Magnetic Field*” (2019)
https://www.researchgate.net/publication/335169091_Wireless_Radiation_Beyond_the_Near_Magnetic_Field

[9] Lodge, Sir Oliver, “*Ether (in physics)*”, Encyclopaedia Britannica, Fourteenth Edition, Volume 8, Pages 751-755, (1937)

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In relation to the speed of light, “*The most probable surmise or guess at present is that the ether is a perfectly incompressible continuous fluid, in a state of fine-grained vortex motion, circulating with that same enormous speed. For it has been partly, though as yet incompletely, shown that such a vortex fluid would transmit waves of the same general nature as light waves— i.e., periodic disturbances across the line of propagation—and would transmit them at a rate of the same order of magnitude as the vortex or circulation speed*”

Appendix I

When the voltage is very high, most of the energy will be transported as hydrostatic aether pressure (electric charge) in the conducting wires. If, however, this voltage is stepped down at a transformer, then as per Bernoulli’s principle, much of the energy will be converted into kinetic energy (electric current) in the wires, and the energy will propagate at a faster speed.