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Newton's Cradle and the Transmission Line

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Abstract. **Two electric currents flowing in opposite directions along the same wire in a transmission line appear to pass right through each other. We therefore require a theory of electric current that can account for this, while at the same time maintaining consistency with Ampère's circuital law.**

The Trolley Photon

I. When a DC power source is connected to an electric circuit, a current begins to flow. The current flow does not however begin simultaneously at every point around the circuit. It begins at both terminals as a closed localized circulation which freely crosses the gap between the two conducting wires. This is where the difference between the conducting material of the wires and the non-conducting dielectric material between the wires comes into play. When the electric current crosses the dielectric gap, it induces linear polarization which in turn induces a back EMF, which in turn impedes the current flow. The pressure from the power source will therefore push the current wide of the linearly polarized region, and hence the circulation will expand between the two conducting wires, leaving behind it a linearly polarized zone which is a store of *'static charge'* or *'potential energy'*. The current across the gap forms an advancing step which is a transverse electric wave of displacement current due to linear polarization.

A transmission line is a special kind of electric circuit in which we have two long parallel wires that are close together in comparison to the length of the circuit. If the power source is disconnected from such a circuit before the step reaches the end of the line, we will end up with a complete electric circulation propagating between the two wires. We will have a "Trolley Photon" in which potential energy in the form of linear polarization is propagating in a wave-like fashion, surrounded by a circulation of kinetic energy (electric current) which is driving the wave mechanism .

It is clear therefore that electric current cannot be a flow of charged particles as is commonly believed, because charged particles would not

jump the gap between the two wires. Instead, electric current must be a pressurized flow of pure electric fluid (aether), where electric fluid is the stuff that everything is made of. We also require that the power source actually pumps this fluid into the circuit from without, rather than merely causing a circulation of fluid that is already inside the circuit.

Collisions

II. When two trolley photons collide, they simply pass right through each other as like two waves, but since the aether cannot move through itself, we need to therefore explain how this can be possible for two closed electric circulations moving in opposite directions along the same set of wires. We will need to devise a wave mechanism involving back pressure and diversions in the current flow, as well as forking and re-joining, and such that at no point will it ever be permitted for there to be current flowing in two directions simultaneously at any given point on the circulation. The general principle will be that the current in the wire gets diverted sideways off the tracks into the dielectric region, then changes its form and is temporarily stored in a pod. Electric current is kinetic energy, and when it moves into the dielectric region, it will change into potential energy in the form of linear polarization stress which has an associated static charge. This potential energy can then recoil again at a later stage, back into the circulating electric current, hence restoring itself into its original kinetic energy form. Bernoulli's principle will apply.

Head on Collisions on the Same Track

III. We will now look at the case of a collision in which the electric current in each photon on a specific wire is flowing in the opposite direction. This means that if we are looking down on the two wires and the photon coming from the left has a clockwise circulation, then the photon coming from the right will have an anti-clockwise circulation. We will first of all consider the case in which the stronger photon, being the one with the higher voltage, has the shorter length. The result is then superficially similar to that of a snooker ball moving through a column of air and causing the air in front of it to be displaced to its rear.

When the two currents collide head on, the stronger circulation drives the weaker circulation backwards, while at the same time the two circulations merge and collectively form a confluence that diverts

sideways into the dielectric region. The stronger photon therefore eats up the kinetic energy (electric current) of the weaker photon and stores it inside itself in the form of additional potential energy (linear polarization). There will therefore be a zone inside the stronger photon in which the state of linear polarization is more intense, and we will refer to this zone as *'the pod'*. As the stronger photon continues to move into the weaker photon, the pod will expand backwards within it, paralleled by a back pressure propagating through the current in the live wire adjacent to the pod. A stage will eventually be reached when the pod completely fills the stronger photon. From this point onwards, as the stronger photon continues to move through the weaker photon, any excess potential energy that it gains from consuming the weaker photon will be balanced by the ejection of excess potential energy at its trailing edge. At the trailing edge, the potential energy will re-emerge from the pod and convert back into kinetic energy again. It will fork when it reaches the live wire and some of the kinetic energy will continue within the existing circulation around the stronger photon. The excess energy will however be pushed backwards by the back pressure in the live wire and a new photon will appear, which will in effect be the re-emergence of the weaker photon. When the stronger photon reaches the end of the weaker photon, the excess potential energy at its trailing edge will fork from the original potential energy and the two photons will begin to detach again. As they detach, the pod that had filled the stronger photon as it traversed the weaker photon, will begin to recede inside the stronger photon as the excess energy is fed back into the weaker photon. The stronger photon will then return to its original energy state.

While the stronger photon is moving through the weaker photon, we will have a picture of three adjacent electric currents in which the middle current shares a side with each of the other two currents. At the shared sides, the current flow will only be in one direction. If the middle circuit forces itself against the circuit on its right, current is siphoned off from the right hand circuit while the left hand circuit is simultaneously being re-fuelled. Hence, the middle circuit eats up the right hand circuit and ejects the waste into the left hand circuit causing it to expand.

A Newton's Cradle with Electric Circuits instead of Balls

IV. We will now consider the case in which the shorter photon is also the weaker photon. As in the case in section **III** above, we will still be considering photons of opposite circulation.

In this case, the longer photon's circulation prevails and the first few moments after the collision will be the same in principle as described in section **III** above. However, once the weaker photon is entirely inside the longer photon, it will remain dormant as a pod containing a region of increased linear polarization, while the longer photon continues as normal. It will appear as if the pod is moving in a wave like fashion through the longer photon, but in actual fact the pod will be stationary while the longer photon moves past it. When the far end of the longer photon reaches the pod, the potential energy contained within the pod will begin to recoil and fork into two directions. The original weak photon will once again begin to emerge in its discrete state. This case scenario is very similar to what happens when a single ball strikes the row of balls in a Newton's Cradle. The kinetic energy leaves the discrete form and passes through the longer row of balls in a wave-like fashion, to once again take on a discrete form as the ball at the far end flies off.

Two Photons of Equal Strength, Different Length, and Opposite Circulation

V. When two photons of equal strength, different length, and opposite circulation collide, the current flows halt each other at the contact region. A back pressure then converts the two currents into increased linear polarization which works its way backwards in wavelike fashion through both photons while eating up their respective circulations. The overlap pod will look like a buffer zone expanding between two electric circulations. When the shorter photon has become totally absorbed inside the overlap pod, the recoil will begin immediately. Hence as the longer photon continues to get consumed at one side of the pod, a new photon will appear at the other side which is in effect a continuation of the longer photon. As the longer photon moves on, the pod will appear to move backwards inside it, but as in the case above, the pod will actually be stationary while the photon is moving. When the pod reaches the trailing edge of the longer photon, the usual recoil mechanism will occur and the electric current will fork. The shorter photon will emerge once again.

Passing on Opposite Tracks

VI. When considering the circulation around a trolley photon, it is here suggested that one of the conduction wires carries live pressurized current

while the other wire is dead, as like the part of a caterpillar track that is stationary on the ground. When two photons that are both circulating in the same direction collide, the live currents will be on opposite wires. The result is that the two photons pass right through each other, and the polarized regions are superimposed in wavelike fashion. This is like two trains passing on opposite tracks.

Conclusion

VII. The electric pulses in transmission lines exhibit distinct wave-like characteristics. In particular, they can pass right through each other giving the impression that two electric currents have passed through each other in opposite directions on the same wire. This illusion can be solved using a very ordered wave propagation mechanism that is based on a caterpillar track circulation of electric current. This mechanism is not however compatible with the conventional idea that electric current is a flow of charged particles since charged particles would not cross the gap between the wires, so we need to go back to the old recipe. We need to restore the electric fluid of Franklin, Watson, and DuFay.

References

Transmission lines of the kind that are described in this article are dealt with in the mainstream literature within the context of electromagnetic radiation. Electromagnetic radiation is however a wireless phenomenon relating to time varying electromagnetic induction and it involves the transfer of energy between different electric circuits, whereas transmission lines concern the motion of single electric circuits along two conducting wires. Electromagnetic induction is not involved in the transmission line mechanism and so the mainstream literature is confusing the issue. As such, there are no references, because this topic is not properly treated in the mainstream literature.