

A Short Note on Maxwell's Idle Wheels

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Abstract. James Clerk Maxwell originally derived his famous equations on the basis that they were the equations that naturally followed hydrodynamically from a sea of tiny aethereal vortices. Nevertheless, Maxwell had difficulty comprehending how such a sea of aethereal vortices could remain stable, and so he introduced electric particles as idle wheels to move around the circumference of his vortices. Maxwell, however, was never happy about this idea and so his sea of vortices ended up on the back burner. This article will briefly examine where Maxwell went wrong with respect to his idle wheels.

Maxwell's Molecular Vortices

I. In his 1861 paper, *"On Physical Lines of Force"*, [1], James Clerk Maxwell conceived the idea of a sea of molecular vortices from which the prevailing magnetic field is constructed, which explains magnetic force, and which serves as the medium for the propagation of electromagnetic waves. These vortices were said to be made partly from aether and partly from ordinary matter. The latter part was the electric particles that he identified with idle wheels. Had he instead identified the electric particles with aether sinks (electrons) and aether sources (positrons), then he would have had a basis for stability. The vortices would then be tiny rotating electron-positron dipoles, [2], [3], aligned along their mutual rotation axes, so that magnetic lines of force constitute vortex rings around the source electric current, with these vortex rings being threaded by a double helix structure of electrons and positrons. Magnetic attraction then reduces to electrostatic attraction acting along the double helix between the electrons and positrons, and as per Maxwell's theory, magnetic repulsion would still arise due to centrifugal pressure emanating in the equatorial planes of these dipolar vortices, at right-angles to the lines of force. Fig. 1 below illustrates a close-up view of a single magnetic field line.

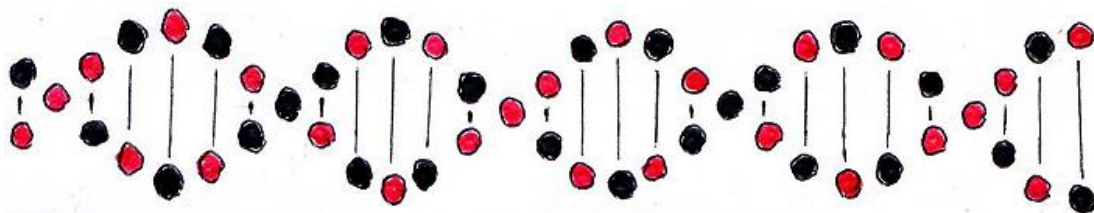


Fig. 1. A single magnetic field line comprised of a double helix of rotating electron-positron dipoles. The vertical lines marked in the diagram represent the equatorial planes of these dipolar vortices, and due to centrifugal force and the fact that the aether (electric fluid) can't pass through itself, then, *when*

in the steady state, no electric fluid crosses between the electrons and positrons at right angles to the field lines. In the axial direction, however, there is a mutually cancelling bi-directional flow. A ray of light can, however, cross such magnetic lines of force at any angle. The precession of the vortices when in the dynamic state, allows for the electric fluid to pass between neighbouring vortices at any angle, irrespective of their default alignment when in the steady state, and it is this net flow of electric fluid that constitutes EM radiation. EM radiation is therefore a relay of tiny electric currents in space, and these electric currents are what gives rise to radiation pressure.

Conclusion

II. If there was ever a single factor that destroyed the credibility of Maxwell's sea of molecular vortices, it was the fact that he identified the electric particles that move around the edge of the vortices with idle wheels. Such a picture was simply too mechanical for most physicists to swallow, and Maxwell himself struggled to make total sense out of it. As such, while suspending judgement, Maxwell moved his sea of vortices to the back burner.

What Maxwell should have done instead, was to have identified his electric particles, not with idle wheels, but rather, with sinks (electrons) and sources (positrons) in the aether. This would then have opened up portals that would have helped to explain how the vortices are actually electrically powered entities, and hence fully stable, just like the 103 elements of the Periodic Table. By replacing Maxwell's molecular vortices with rotating electron-positron dipoles, we will then have the basis for "*The Double Helix theory of the Magnetic field*", [2], [3], which would have been much more credible than a sea of vortices with idle wheels. It was the idea of idle wheels which totally destroyed the credibility of Maxwell's vortex sea in the eyes of many of his contemporaries, and in the eyes of generations to come. The idle wheel idea easily fuelled straw man arguments on the part of aether deniers, and sadly this overshadowed the truly amazing manner in which he derived his famous equations hydrodynamically using the principle of a sea of aethereal vortices, [4], [5].

References

[1] Clerk-Maxwell, J., "*On Physical Lines of Force*", Philosophical Magazine, vol. XXI, Fourth Series, London, (1861)

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[2] Tombe, F.D., "*The Double Helix Theory of the Magnetic Field*", (2006)

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[3] Tombe, F.D., "*The Double Helix and the Electron-Positron Aether*", (2017)

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[4] Lodge, Sir Oliver, “*Ether (in physics)*”, Encyclopaedia Britannica, Fourteenth Edition, vol. 8, pp. 751-755, (1937)

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See pp. 6-7 in the pdf file in the link above, beginning at the paragraph that starts with, ***Possible Structure.*** –, and note that while the quote suggests that the ether is incompressible, this is almost certainly not the case. The quote in question, in relation to the speed of light, reads,

“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”

[5] 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