

**Fundamentals of a Theory of Aether – Part 3
Magnetic Field of Current-Carrying Coil
Revealed with Computational Fluid Dynamics of Aether**

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Abstract

In this short communication it is announced the successful simulation of the magnetic field of a current-carrying coil using the methods of computational fluid dynamics on aether. The magnetic field lines correspond to the aether vortex lines obtained computationally. The magnetic field pattern is reproduced to great detail and some of the features missing in the magnetic field can be explained by observing the behavior of the field as it is generated by the electric current in the coil. The simulation is available on Youtube video platform.

Keywords: aether, electrigen, diffusion wave, electric current, magnetic field, coil

Main

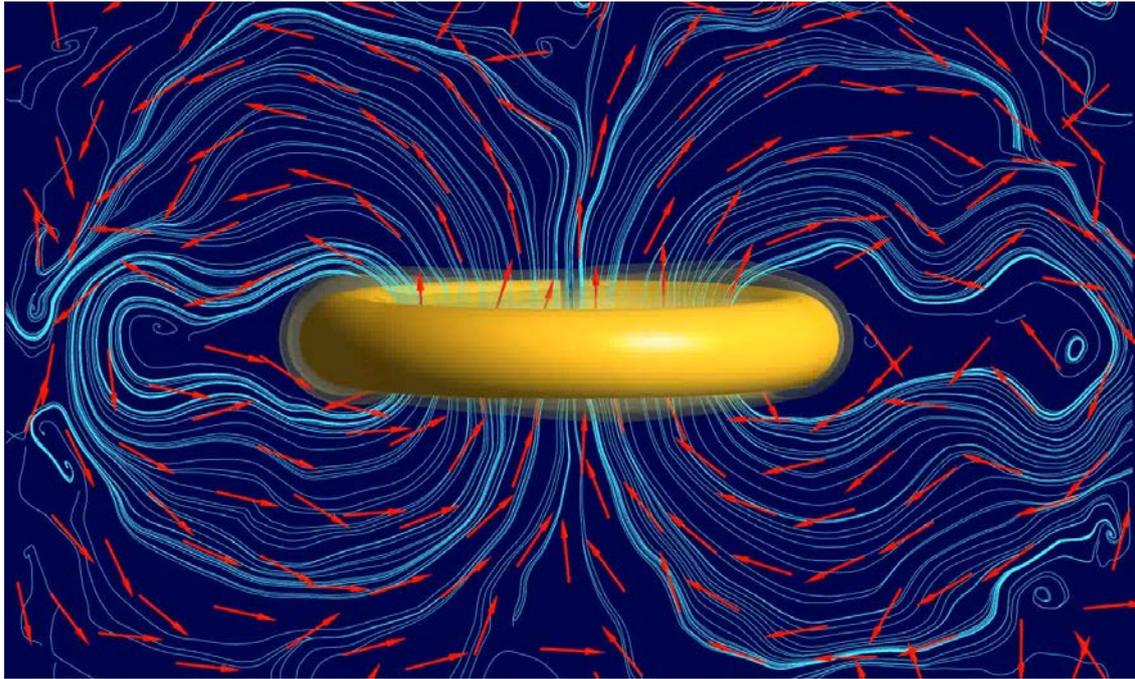
In the article Fundamentals of a Theory of Aether – Part 1 it was shown how the concept of electrigen diffusion wave can describe the electric current in a wire and how the mechanical action of the electrigen on the aether surrounding the wire can account for the production of a magnetic field around it. Computational fluid dynamics (CFD) methods were not employed at that stage, only the equations of surface waves being used to obtain a general idea of the aether flow around a straight current-carrying wire.

Obtaining the magnetic field pattern for a current-carrying coil by using CFD came as a necessity for proving the validity of the theory advanced then. The results show that, indeed, the theory is tenable as calculations clearly show striking similarity with the magnetic field obtained experimentally.

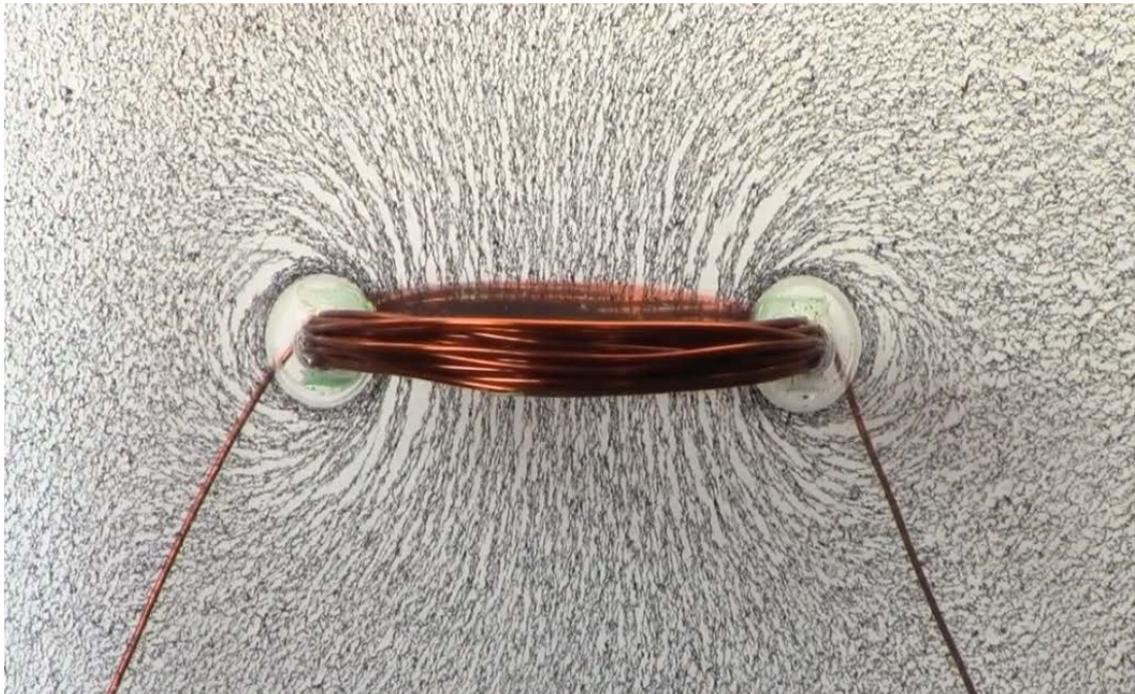
On the next page are shown some screenshots of the results, while a full time-dependent simulation can be seen on Youtube at

<https://www.youtube.com/watch?v=gcFTWcP5Evo>

(Video title: Aether, Electrigen, and the Magnetic Effect of the Electric Current - CFD for current carrying coil)



(Fig. 1 Aether vortex lines in light blue obtained computationally correspond to magnetic field lines. The red arrows are vorticity vectors.)



(Fig. 2 Magnetic field lines obtained experimentally)

The time-dependent simulation is very instructive as it clearly shows that the reason why the magnetic field of the coil is not well developed outside its core is because the aether flow there is unstable and the aether vortex lines break and reconnect very often. This does not happen inside the core of the coil and this is why a magnetic field can be obtained with iron filings.