How Hilbert's attempt to unify gravitation and electromagnetism failed completely, and a plausible resolution

(Towards Helmholtz's electron vortex from Kolmogorov's theory of turbulence)

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Abstract

In the present paper, these authors argue on actual reasons why Hilbert's *axiomatic* program to unify gravitation theory and electromagnetism failed completely. An outline of plausible resolution of this problem is given here, based on: a) Gödel's incompleteness theorem, b) Newton's *aether stream* model. More experiments and observations are called to verify this new hypothesis, albeit it is inspired from Newton's theory himself.

Introduction

First of all, it is known that Hilbert and Einstein were in race at 1915 to develop a new gravitation theory based on covariance principle.[1]

While Einstein seemed to win the race at the time, Hilbert produced two communications which show that he was ahead of Einstein in term of

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unification of gravitation theory and electromagnetic theory. Hilbert started with Mie's electromagnetic theory. However, as Mie theory became completely failed, so was the Hilbert's *axiomatic* program to unify those two theories [1].

Einstein might be learning from such an early failure of Hilbert to unify those theories, and years later returned to Mie theory.[1]

What we would say here is that Hilbert's axiomatic failure can be explained by virtue of Gödel's incompleteness theorem: which says essentially that any attempt to build a consistent theory based on axiomatic foundations can be shown to be inconsistent. Nonetheless only few physicists seem to grasp this result.

What can we learn from that story?

First of all, it leads us back to Newton's *aether stream* model as will be discussed in the following sections.

Moreover, it may be not only that it is an elusive dream to unify gravitation and electromagnetic theories from pure thoughts, but it clearly shows that we ought to return to the old days of Maxwell and also Heaviside who have given hints on how to come up with a more realistic unification of gravitation and electromagnetic theories.

To us, it also shows that we may need to re-read Maxwell's original papers: perhaps we should find out how he thought about cogwheel, molecular vortices etc…and they may lead us to a correct theory of gravitation (and also how to connect it with *classical electrodynamics*). In the meantime, it is worth noting here that Tesla and other experimenters have tried to come up with a simpler version of such unification theories, although most of them were not as familiar to many physicists unlike General Relativity theory.

Enter Gödel's incompleteness theorem

Gödel's ground breaking results were obtained against the backdrop of the foundational debate of the 1920s. In 1921, reacting in part to calls for a "revolution" in mathematics by the intuitionist L. E. J. Brouwer and his own student Hermann Weyl, Hilbert had proposed a program for a new foundation of mathematics. The program called for (i) a formalization of all of mathematics in an axiomatic systems followed by (ii) a demonstration that this formalization is consistent, i.e., that no contradiction can be derived from the axioms of mathematics. Partial progress had been made by Wilhelm Ackermann and John von Neumann, and Hilbert in 1928 claimed that consistency proofs had been established for first-order number theory. Gödel's results would later show that this assessment was too optimistic; but he had himself set out to with the aim of contributing to this program.[5]

To tell Godel's monumental result, allow us to quote from Devlin:[4]

> "In 1931, a young Austrian mathematician published a paper that sent shock waves through the mathematical community and forced mathematicians to take a fresh look at their discipline. The mathematician was Kurt Gödel, and the result proved in his paper became known as the Gödel Incompleteness Theorem, or more simply Gödel's Theorem—although it was by no means the only major theorem he proved during his highly successful career. He is also known as one of the inventors of the theory of recursive functions (which formed part of the foundation for computers).

> Both of these major discoveries involved axiomatic systems, and neither can be properly understood without an appreciation of what mathematicians means by the word "axiom" and the role axioms play in mathematics. A misunderstanding of the nature of axioms is what lies behind a significant amount of nonsense that has been written about Gödel's Theorem over the years.

> Gödel's Theorem says that in any axiomatic mathematical system that is sufficiently rich to do elementary arithmetic, there will be some statements that are true but cannot be proved (from the axioms). In technical terminology, the axiom system must be incomplete. At the time Gödel proved this theorem, it was widely believed that, with sufficient effort, mathematicians would eventually be able to formulate axioms to support all of mathematics. The Incompleteness Theorem flew in the face of this expectation, and many took it to imply that there is a limit to the mathematical knowledge we may acquire. Few mathematicians think that way now, however. The change in our conception of mathematical truth that Godel's theorem brought about was so complete, that today most of us view the result itself as merely a technical observation about the limitations of axiom systems." [4]

To summarize: "*Gödel's Incompleteness Theorem changed the concept of mathematical truth and showed the limitations of axiom-based systems*." In other words, Godel effectively put Hilbert's axiomatic program into ruins. And so was Hilbert's approach to unify gravitation and electromagnetic theory. Now the hard question: is it possible to find a way outside such a Godel's spider web?

One of us (RNB) has an interpretation of Godel theorem in theoretical and mathematical physics:

> "Without observations, experiences, and explorations and experiments, our mathematics and physics start to become non-physical fictions, fantasies, or lies. Physics concepts without physical evidence to support them, do not function well, in the engineering sense. In the sense of Godel, we can never know everything there is to know, intellectually. But we can **experience** everything, directly. That is the way out of Godel's Law. Then, a new kind of intellect develops, based on direct experiences and observations, in the moment.
> Experiential intellect is superior to the analytical intellect, because it is based on the physical facts, the way things actually are, <u>now,</u> rather than abstractions based on the past. Nature functions based on experiential understandings, not abstractions.
> Summarizing: The way out of Godel's Law is Direct Experience, which is keeping the attention only in the senses and sensitivities, without thinking. This is a form of meditation."

A plausible resolution: Basics of Helmholtz electron vortex

There are various models of electron which have been suggested, for instance see Chekh et al. [10]

But we seek a more realistic electron model which is able to describe to experiments conducted by Bostick et al. [9]. In our attempt to explain such experiments of electron creation in plasma, allow us to come up with a new model of electron, based on Helmholtz's electron vortex theory. In turn, we will discuss a plausible model of electron capture event inside Earth (matter creation), which in turn can serve a basis to explain Le Sage/Laplace's push gravity. We will discuss its implications along with receding Moon effect in two forthcoming papers.

The Helmholtz vortex model of the electron as illustrated in the photo of a Helmholtz vortex (Fig. 1), is a toroid made of nested concentric toroidal flows of smaller particles, perhaps the inertons of Krasnoholovets, or aggregate particles made from Bhutatmas. (The "*Bhutatma*" infinitesimal particle of Vedic lore is the ultimate building block of everything, being the smallest unit of matter, and at the same time, the smallest unit of Consciousness.

Lines of constant flow are given by

$$r = \mathbf{a} \sin \Omega = \mathbf{a} \sin \Omega t,$$

where **a** is a constant. The velocity components are

$$dr/dt = \mathbf{a} \, \Omega \cos \Omega \, t$$

 and

$$r \, d\theta/dt = \mathbf{a} \, \Omega \sin \Omega \, t$$

The Ωt implies that a characteristic wave function is associated with the vortex, but we haven't worked on it yet. This may be an indication of origin of the de Broglie's wave of the electron, or it may have something to do with the Compton radius of the electron, or both.

The constant **a** may represent the outer limit of the vortex-particle, if the internal circulation velocity of smaller particles does not exceed light speed. If the circulation velocity is larger than c, at the outer shells of the nested vortex, there may be a species of sub-particles which is always being removed from the nested toroidal form, which must be replenished to the vortex which is living in an "atmosphere" made larger circulations of sub-particles. This is due to considering the electron as having a fixed mass, a fixed extent, and a fixed charge (which may not be the case for all time and in all circumstances).

There should be some set of equations which shows vortex sub-particle replacement activities from the ambient aether, but we haven't worked on it either.

The first equation is a circle tangent to the z axis at the origin, with a center located in the X Y plane at the distance

a/2 = p

where p is the potential of the electron, and is independent of the orientation of the electron vortex.

Then the electron can be viewed as a toroid, with a volume

V = 2 π r times π r ^2 = 2 π^2 r^3

Three potentials are indicated here: Static potential, Spin potential, and a Dipole potential. Since the electron vortex has mass (which may change from its present value, according to the parameters of the ambient aether in the vicinity of the electron at the given place and time), a total of six potentials are implied.
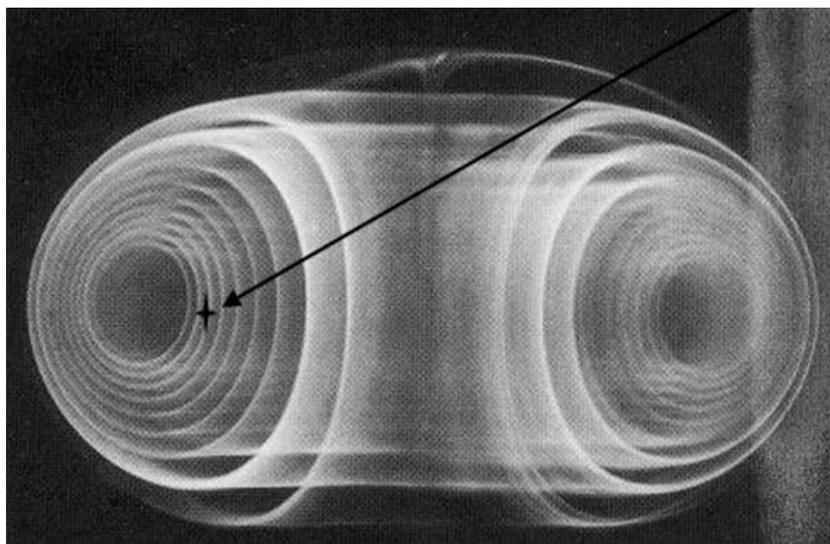

Figure 1. electron vortex capture event – Helmholtz electron vortex is *nearly indestructible* (after R.N. Boyd)
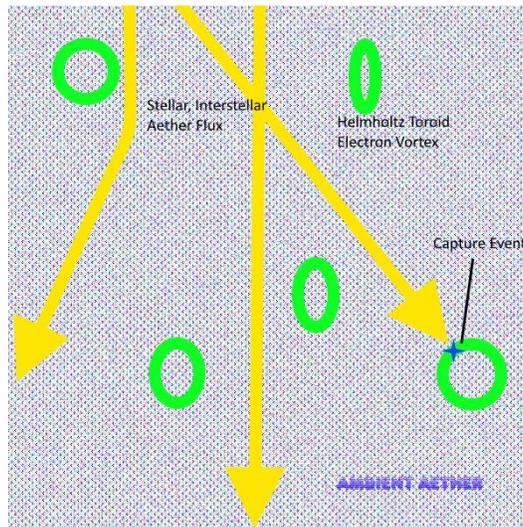
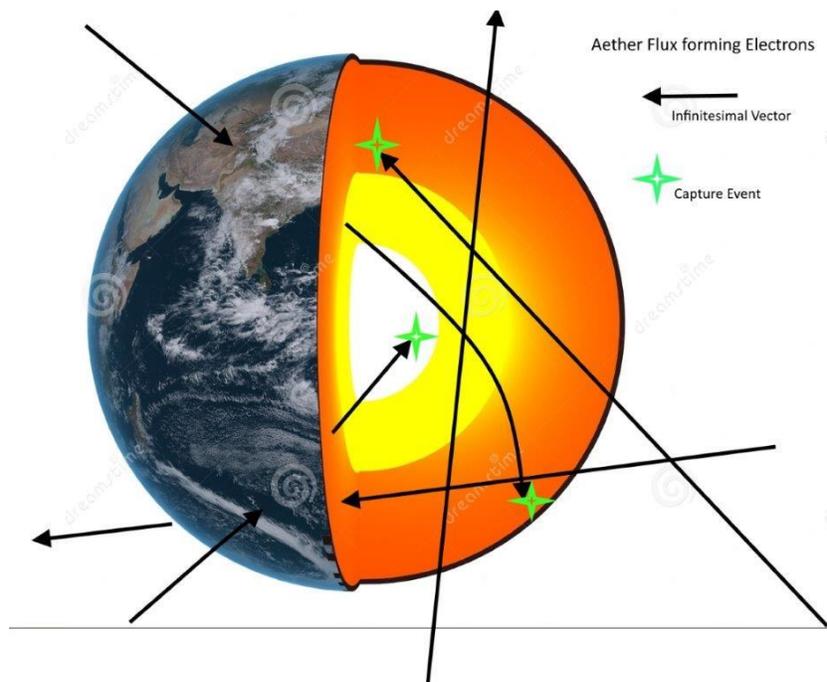Figure 2. electron vortex capture event (after R.N. Boyd)

Figure 3. llustration on how matter creation can take place in inner core of Earth

(Source: https://www.dreamstime.com/royalty-free-stock-photography-earth-core-image1890727)

This illustration (Fig. 3) shows stellar and interstellar aether flows interacting with electron vortices. In some cases the stellar flux is diverted by the electron vortex. In other cases, the flux entity misses entirely, similar to a neutrino. In some unusual cases the flux is captured by an electron vortex and participates in it for a while.

The illustrations were produced to show (electron) capture events of individual infinitesimals from the omni-directional aether fluxes which comprise, and cause, gravitation in the LeSage-LaPlace paradigm, to show how individual infinitesimals can be intercepted by electron vortices. The process of electron formation happens most often, due to vortex "street" events due to existing electron spheres, intersected by parallel aether flows, which can event-sourced, on occasion, or omni-directional, most of the time. So, although infinitesimal capture events are relevant, it seems at this moment, that the primary electron-positron pair creation events are due to *von Karman streets* of vortices of alternating directions, which will form vortex <u>rings</u>, when a directional aether flow (a sustained gust of aether wind) is impeded by an existing electron KH vortex sphere.

And, the most salient part of the KH electron vortex form, at its outermost margins, is almost **spherical**, as well as toroidal, as can be seen from the diagrams and the photograph of KH vortices. Thus, due to laminar flows intersecting with existing spheres, vortex streets are caused to form into KH vortex <u>rings</u>, which are rotating in alternating opposite directions. Electrons and positrons also have equal and opposite "charge" and are considered to be "*anti-matter*" in relation to one another.

But at this point, readers may ask: what is "anti-matter" really, other than opposite directions of rotation of similar particles? And what is "charge" really, in terms of aether behaviors?

So, essentially, electron-positron pair formation is properly described and justified for the first time in the history of particle physics, as both electrons and positrons are KH vortices, rotating in opposite directions. Electron-positron pairs are, at least temporarily, linked by bridges of the same material particles which the *e-p* particle pairs are being formed in.

This view may be related to Falaco Soliton vortex pairs as described and discussed by the late R.M. Kiehn [11][12][13][14], but it is not clear yet if this is actually a correct model when describing KH electron-positron pair formations.[1] See Figure 4.
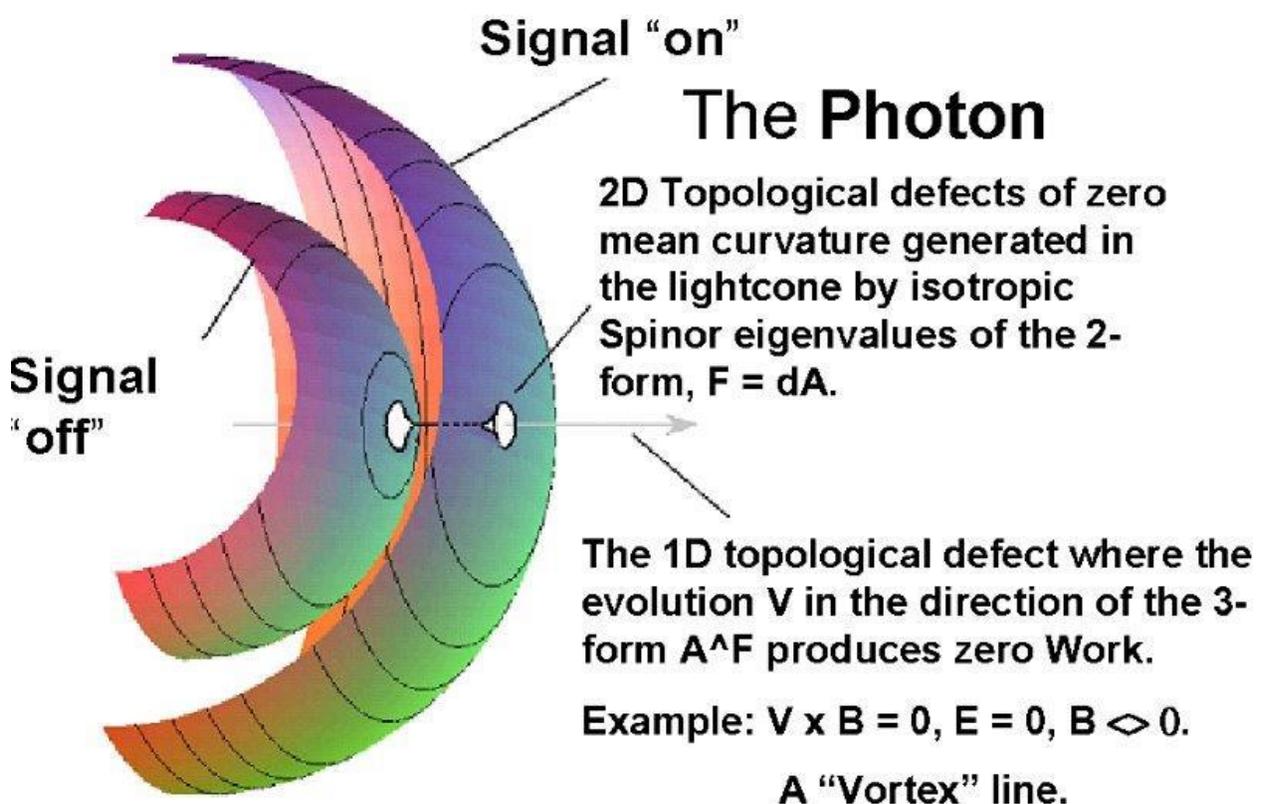

Signal "on"

The Photon

2D Topological defects of zero mean curvature generated in the lightcone by isotropic Spinor eigenvalues of the 2-form, F = dA.

Signal "off"

The 1D topological defect where the evolution V in the direction of the 3-form A^F produces zero Work.

Example: V x B = 0, E = 0, B ◇ 0.

A "Vortex" line.

Figure 4. Photon bi-vortex in SQ Aether media (Falaco soliton model) (After: RN Boyd)

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[1] Note by RNB: I brought it up with Kiehn, many years ago that electron-positron pairs might be Falaco Soliton pairs. He gave no response to that suggestion, which is not quite a good sign. But I tried to develop further his ideas.

Pairs of electrons and positrons are required to make the larger particles, such as the proton, which is an agglomeration of an exact number of electrons and positrons, with one positron excess, to account for the positive charge produced by the proton.

What needs to be discovered here is: what property of the aether determines the exact numbers of electron-positron pairs, required to form protons and neutrons? Does this have to do with "packing" limitations, imposed by the media? Is this to do with the phi ratio inherent in the media?

Each electron which already exists, acts as a large rock in a moving stream, causing deflections of the normal aether flow, slowing down the flow-rate, and producing eddy currents and turbulence in the ambient aether near the given electron. When the turbulence becomes large enough, additional electrons form in the media, which act to choke off the interstellar aether flow even more and impede its normally unencumbered motion. This is similar to adding more and more rocks into the channel of a stream of water, so that the flow rate of the water slows down, as more and more rocks are added.

This process was discovered by Nikola Tesla during his experiments at his Colorado Springs laboratory. It is a good thing this happens, or aether avalanches produced by Tesla's 100,000,000 volt explosive electrical discharge events could have burned away the very air we live in.

Tesla was relieved to find out the discharges were choked off, accompanied by vast numbers of newly created electrons. Tesla found the excess electricity resulting from the excess electrons to be a nuisance to his other experiments, so he dumped the excess electrical power into the earth's crust.

Relation between Helmholtz's electron vortex model and turbulence theory

Solving the turbulence problem means finding (unknown) laws of the mixing of momentum and scalars, at asymptotically high Reynolds numbers. About hundred years ago, Osborne Reynolds and soon also Friedman & Keller thought that we can solve the problem by series expansions of the Navier-Stokes equations, a process which provides dynamic equations of motion for higher and higher (statistical) moments.

Unfortunately, such an expansion does not visibly converge. Certain closure assumptions are needed, such that this approach is not strict. With respect to theory, all subsequent research followed the paradigms of Reynolds, Friedman, and Keller, without any exact result.

The famous text by Landau & Lifshitz on fluid dynamics states that universal constants of turbulent motion, like von Karman's constant, can only be measured (rather than predicted by theoretical considerations).

Later, Kolmogorov realized the hopelessness of Reynolds-type paradigms and then he introduced an argument: *Similarity Analyses*, which immediately led to the scaling laws of turbulent spectra, e.g. the famous 5/3rd law, which is strict.

At an infinitely high Reynolds number, the physical properties of the specific fluid under study "vanish", due to vanishing viscosity. So the viscosity of the media at the given energy-density, is relevant, in aether considerations.

This sort of turbulence is consequently described by the (regularized) Euler equation, which represents an "inert geometry". By this, the turbulence problem rests on the Euler equation and its singular solutions, such as "vortex atoms", as first introduced by Lord Kelvin almost 200 years ago, based on von

Helmholtz's vortex theorems. Such solutions can be treated as non-trivial three-dimensional particles, in motion.

In most cases these motions are extremely hard to predict are the focus of a special branch of mathematics – *topological hydrodynamics*.

There are two exceptions: Completely isolated vortices, and a "gas" of comprised of many vortices. The former case is trivial. In the latter case, one can do what has already been done by Maxwell in his kinetic theory of gases: Assume a chaotic (Brownian) motion of the entities involved. This paradigm, produces simple and comfortable equations of motion, of the advection-diffusion-reaction type, for the key variables of turbulence, turbulent kinetic energy, and r.m.s. vorticity.[2]

This approach allows a theoretical prediction of von Karman's constant as 1/Sq Rt (2π) = 0.399 (The international standard value, based on measurements is 0.4).

This result is physically related to the Helmholtz vortex model of the electron. The correct aether turbulence model will produce electrons in the manner of a fluid flow producing turbulence.

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[2] We're not sure this is going to work for aether considerations, but it might. See http://arxiv.org/abs/0907.0223.
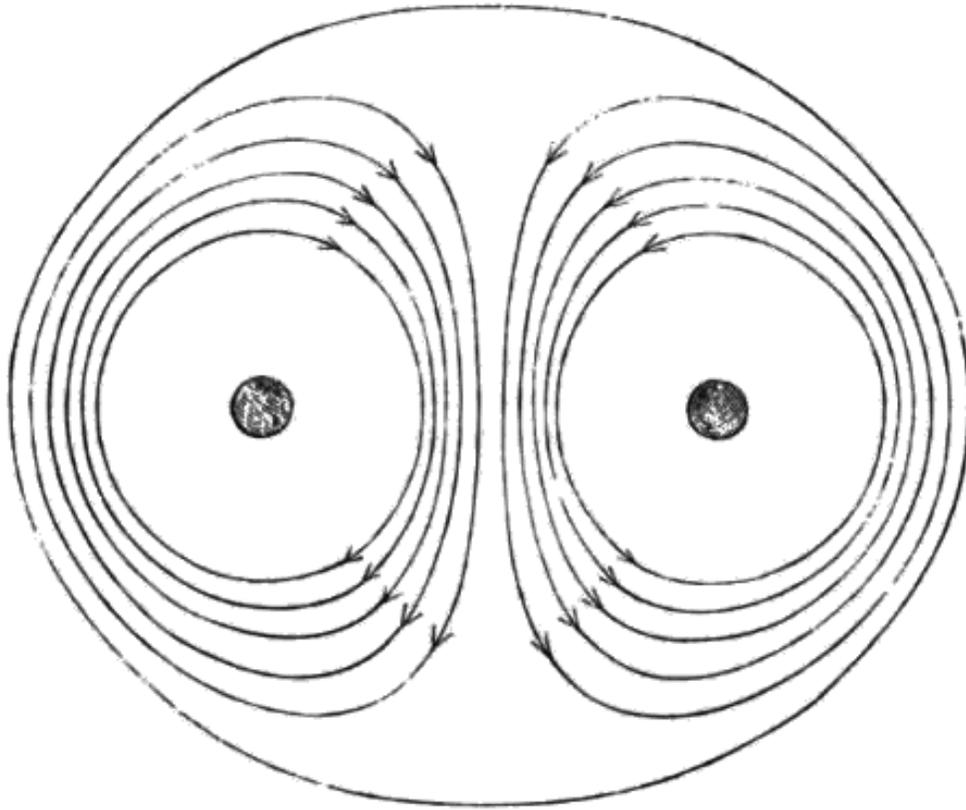
Figure 5. Helmholtz's atom model should be applied to electron vortex (after RN Boyd)

The form of the Helmholtz vortex is circular at the surface, with toroidal shells made from the same smaller particles, circulating internally.

This allows the "substructure" requested by the "ring model." The ring model is constrained to behave according to Einstein's version of relativity, by extraneous artifices and excuses, all of which are wrong, from my point of view. There is nothing preventing **any** faster than light behaviors, other than Einstein's version of relativity, which is **completely non-physical**, and only functions internal to one's imagination.

One of the hugest mistakes ever made in physics was Einstein's ill-advised attempts to constrain everything in existence to light speed, including time. This causes a conceptual wall to be erected in the mind, which prohibits

superluminal behaviors of any kind, and makes interstellar travel and power without fuel, impossible, just because of a mathematical fantasy that cannot be proved as valid by any manner of physical experiment. There are vast numbers and types of experiments which refute every part and portion of the irrational arguments of Einstein's version of relativity.

It seems a good idea is to combine the "ring model" of the electron with the Helmholtz vortex model of the electron. The conclusions of the ring model which finds the Dirac and Schrodinger's equations invalid, are just a few of the mistakes in the development of the ring model that need to be corrected in the Helmholtz model which allows that *superluminal* behaviors of every kind may participate.

On the plus side, they have done most of the other physics requirements work already. Once we provide the corrective measures which exclude relativistic considerations, we will have a very compelling model for the electron, which is based on nested flows of SubQuantum particles, which comprise a toroid when considered as a unit whole.

We think the completed toroidal electron model will be fully testable by various experiments. [3]

But, due to the work with Fabriciuss, in deriving the Kolmogorov vortex at $10e^{-58}$ m, corresponding towards Kolmogorov turbulence in a SubQuantum media, as the material and activity which forms the electron vortex, and the photon vortex, partly because Ivars Fabriciuss and one of us (RNB) have

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[3] Note by RNB: In addition, the relationship between photons and electrons may be corrected by this investigation. The model of the photon I developed with help from Ivars, was proved by experiment at Rutgers. The photon is a bi-vortex made of internal circulations of particles, which are each made from internal circulations of particles, and so on. I think the Kolmogorov Limit may be involved here.

already derived the 10e -58 meter Kolmogorov vortex. So the same logic may apply at larger scales.

Natural extensions of Kolmogorov's studies of turbulence, towards the infinitely small, have directly derived turbulence-generated vortices as small as **10e -58 m**, which we call Kolmogorov vortices. These are the smallest creatures which are still influenced by gravitation. Smaller creatures are the primary cause of gravitation, in this model, which is related to both the LaPlace and LeSage models of gravitation. Both these models are valid, depending on how one is looking at the situation, so we are combining them into one model. We also have reproducible experimental evidence and instrumented spacecraft observations, which physically support this model.

Fabriciuss suggested that multiple Kolmogorov vortices might form a geometric inter-relationship which would then comprise an electron.

The "Bhutatma" infinitesimal particle of Vedic lore is the ultimate building block of everything, being the smallest unit of matter, and at the same time, the smallest unit of Consciousness.

Once the errors are removed from the ring model, and we hope that soon we will be able to illustrate electron formation from Kolmogorov turbulence in a perfect fluid, then our Helmholtz vortex model will be excellent. An outline of such a model of electron creation will be discussed at the following section.

Turbulence origination of Kelvin-Helmholtz electron vortex from classical perspective

For a non-viscous fluid, pressure exerts a force of -grad p per unit volume. (There is also a gravitational aether force, ρg per unit volume.) The aether fluid obeys Newton's law of motion, so $\rho dv/dt$ = -grad p, as the equation of motion. (This is used to determine fluid pressure when the flow is known.)

A vorticity field is $\omega(x,y,z,t)$ in magnitude and direction, at any point. Lines drawn parallel to ω are called vortex lines, and their density can express the strength of the rotation, just as streamlines define the velocity field, and magnetic field lines define a magnetic field. (Such lines are not real, but greatly aid in visualization).

The line integral of the component of velocity, tangent to a closed curve, is called "circulation", and clearly measures the amount of rotation in the vortex. Let's take a small circle surrounding an area $A = \pi r2$ as the path of integration. If the angular velocity is ω, then the circulation will be $2\pi r$ x $\omega r = 2\pi\omega r2 = 2\omega a$. Thus, the circulation of the fluid, per unit area, is directly proportional to the angular velocity of rotation.

Stokes's Theorem states that the circulation of a vector about any curve C, is the surface integral of the curl (del cross) of the vector over the area enclosed by C. If this is applied to the present case, we find that curl $v = 2\omega$, so that the rotation of the vortex is half the curl of the velocity. Since the divergence of the curl of a vector is identically zero, div $\omega = 0$.

This means that if we consider a tube whose walls are parallel to ω, called a vortex tube, then this tube has the same "strength" (the product of the area and ω), at any point. This means that the vortex tube cannot end within the fluid, and must either close into a ring, or go to a boundary.

The Kelvin-Helmholtz theorem, states that the substantial derivative of the circulation about any curve C, in a fluid of zero viscosity, vanishes. This applies to any curve C on the walls of a vortex tube, or on any surface parallel to the vorticity, and implies that vortex lines are carried with the fluid, and that the "strength" at any point remains constant.

If the initial state of a fluid to which the KH theorem applies, has no rotation, that is, curl v = 0 everywhere, the fluid will remain irrotational as it moves. This also means that if rotation exists in the vortex, it will persist for all time. The stream function in a fluid or gas is analogous to the use of the vector potential of the magnetic fields of electric currents. From this, the foundational basis of electromagnetism is actually a description of fluidic flows in the aether. Consider a vector field A = kA(x,y). (A(x,y) may also vary with the time, but we will consider that later.) Suppose that v is derived from A by the rule v = curl A. Writing this out: $v = i(\partial A/\partial y) - j(\partial A/\partial x)$, so that $vx = \partial A/\partial y$ and $vy = -\partial A/\partial x$.

Now, writing out the continuity equation of div v = 0, it is automatically satisfied for any function A. To find the relationship between A and the vorticity, we write out the z-component of curl v, to find that $2\omega = \partial vy/\partial x - \partial vx/\partial y$ -div grad A.

In considering two-dimensional motions, the vorticity of the aether fluid can only be parallel to the z-axis, since the velocity must lie in the x y-plane and is independent of z. (The vector potential of a magnetic field satisfies the same equation, where the current takes the place of fluidic vorticity.) The above, is Helmholtz's equation. The one scalar function A, thus allows us to find two interrelated components of the fluid velocity.

If the aether flow is irrotational, then A will satisfy Laplace's equation, and solve the problem as well as the velocity potential φ . In fact, A and φ are conjugate functions. In two dimensions, they are the real and imaginary parts of a complex analytic function. The streamlines A = constant, are orthogonal to the equipotentials φ = constant, again pointing to the direct relation between fluidic aether flows and the Maxwell equations.

Vortex lines have been postulated to study fluid dynamics. A vortex line has a finite strength (vorticity times area), but zero area, similar to the understanding

that a dipole has zero length. The resulting vortex lines tend to propagate at infinite velocity, unless the lines remain absolutely straight. (This would be the 5th aether phase state in *Mishin's 5-phase aetherdynamics*.)

Another property of the aether in its fluidic state, is a vortex sheet. To see what this is, imagine a horizontal interface between two horizontal winds of different velocity. If a change in velocity takes place over a small interval, this is a good approximation to a vortex sheet. Helmholtz and Kelvin showed that such a sheet was unstable to small perturbations. The KH instability has actually been observed as being the cause of a disturbance called a Kelvin-Helmholtz's "wave".

Now *we are beginning to discover the origin of the various types of turbulences in the ambient aether flows which eventually manifest as KH electron vortices.* The aether flows around an already existing, but non-motional, electron vortex in a streaming aether fluid flow, sheds vortex pairs which are rotating in opposite directions, alternately from the two sides of the KH vortex, resulting in lines made of vortices, called a vortex "street" (also called a "*von Kármán street*"), behind it. These "streets" are seen on all scales, from flows in brooks, to the atmosphere, to the fluidic aether in which KH electron vortices eventually come into existence.
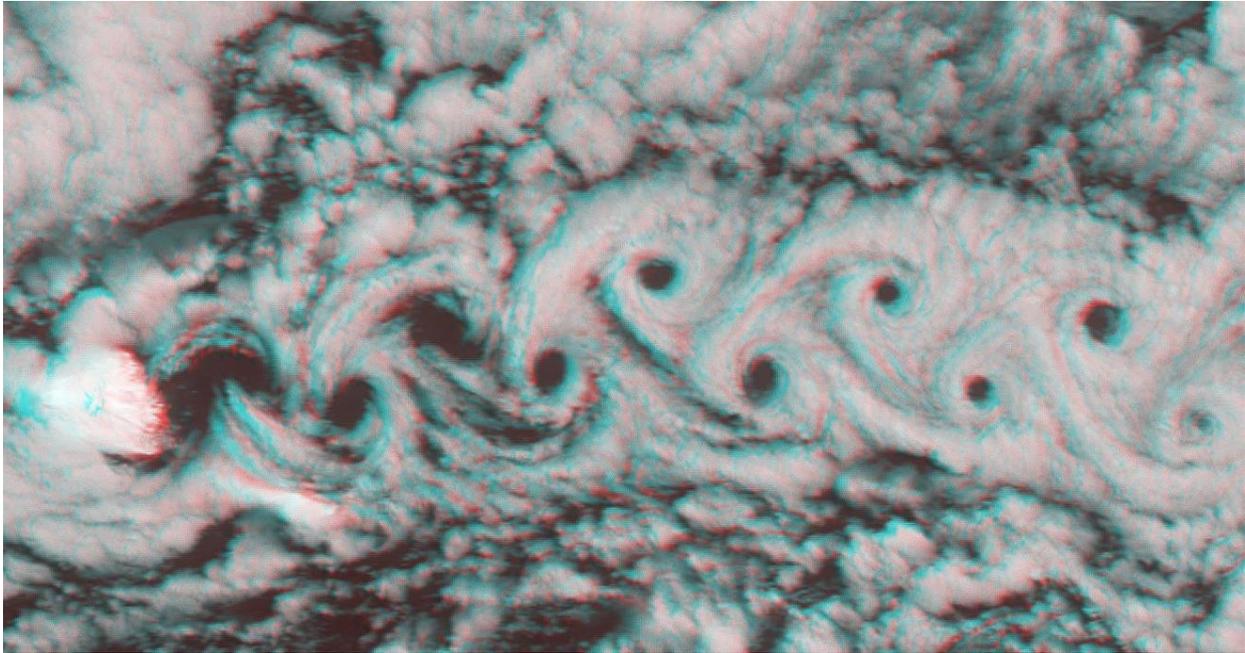
Figure 6. Illustration of von Karman street (source: [7], see also [8])

Alternating transverse forces can act on a cylinder, for example a telephone wire, which can make it vibrate. This is the reason why wires "sing" in the wind. The wire cylinder is stationary in a stream of moving media. Behind the cylinder is a turbulent wake of slowed air. Two vortex sheets are formed on each side of the wake, and their instability results in the vortex streets (streams of vortices). Vortices are formed in a Kelvin-Helmholtz instability in the same way. Analogous effects occur in aether flows which pass around an existing electron sphere, but in this situation the resulting "street" of vortices form into rings, which are exactly many newly formed KH vortices.

Vortex "shedding" produces resonances with the object that impeded the flow. In this case, the vortices are resonant with the existing electron. This means the positron could be viewed as an "anti-resonant" particle. Resonance at this level will constrain the vortices in the "street" to form duplicates that are the same as the original forms, in terms of "aether mass" (constrained aether forms). This also implies that positrons can be the basis for the formation of new electrons, in the parallel aether stream. See figure 7.
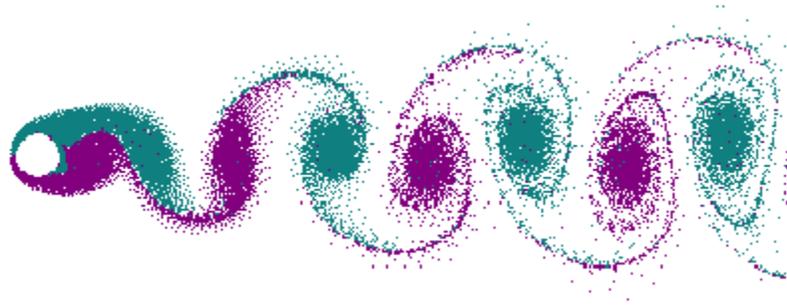
Figure 7. alternating electron-positron, alternating rotation directions (After RN Boyd)
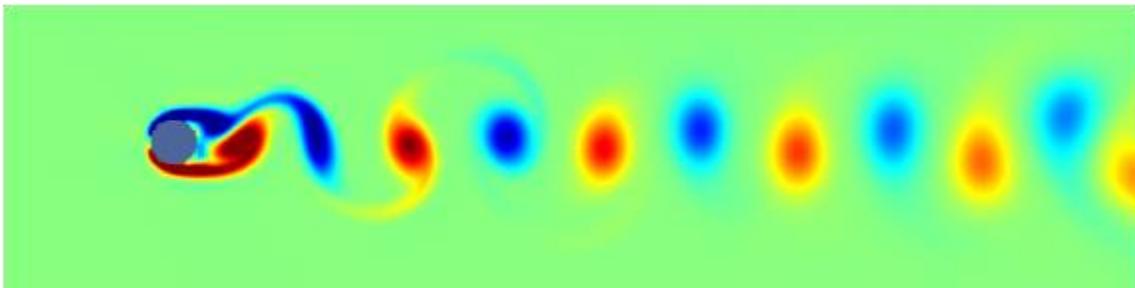

Figure 8. alternating electron-positron, (After RN Boyd)

The above figure 8 is an alternative version of Figure 7. This raises a number of questions: Does this imply that both positive and negative charges already both exist, internal to the aether which comprises the aether winds? This implies that behaviors of obstructed aether flows are the origination of the **cause** of the distinct <u>charges</u> of electrons and positrons, and of electrons and protons.

The KH vortex model of the electron is simultaneously a sphere, surrounding a nest of concentric smaller vortices, which have a vortex ring at the middle of the concentric aether flows which comprise the particle. So the ring model is only partially valid.

Concluding remarks

We begin with Hilbert's axiomatic program to unify electromagnetic and gravitation theory, and we remark that Godel's finding effectively put Hilbert program into ruins.

In the meantime, there are various models of electron which have been suggested, for instance see Chekh et al. 10]

But we seek a model which is close to experiments conducted by Bostick et al. [9]. In our attempt to explain such experiments of electron creation in plasma, allow us to come up with a new model of electron, based on Helmholtz's electron vortex theory. In turn, we will discuss a plausible model of electron capture event inside Earth (matter creation), which in turn can serve as a basis to explain Le Sage/Laplace's push gravity. We will discuss its implications along with receding Moon effect in two forthcoming papers. [4]

Summarizing, it is very significant to consider *matter creation* process in nature. For instance, one can begin by considering the correct presentation of Newton's third law is not F=ma, but F=d(mv)/dt=v(dm/dt) + m(dv/dt). In other words, it is possible of matter creation (dm/dt), and this is consistent with *Narlikar's work*.

We are also in the middle of preparing a joint book on this topic along with Dr. Robert Neil Boyd and Dr. Slobodan Nedic, on Laplace model of gravitation and also aetherdynamics theory, so we can expect some new results later. The title of the upcoming book is: *Going beyond Tesla.*

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[4] Under preparation, to be presented in *EuroSciCon 2019* (Theme: Quantum and Plasma Physics).

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