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Main: AnExceptionallyElegantTheoryOfEverything

An exceptionally elegant "Theory of Everything"

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Note October 15th: After publishing this article, I receved a **lot** of e-mails. The vast majority of them positive, containing reasonable critical questions or containing suggestions for further considerations. I am working trough all of them, but it might take a while before you hear anything back from me, since the e-mails are coming in faster than I can reply at this moment. I appreciate all of them. Thanks for your understanding.

Abstract

In a **previous article**, we stated that all currently known areas of Physics' theories converge naturally into one **Unified Theory of Everything** once we make one fundamental change to Maxwell's aether model. In that article, we explored the history of **Maxwell's equations** and considered a number of reasons for the need to revise Maxwell's equations. So, if you're more interested in an intuitive explanation, you may want to start there.

In this article, we will make the **mathematical** case that there is a hole in Maxwell's equations which should not be there, given that we started with the same basic hypothesis as Maxwell did:

A physical, fluid-like medium called "aether" exists.

Maxwell did not explicitly use this underlying hypothesis, but abstracted it away. This leads to a mathematically inconsistent model wherein, for example, units of measurements do not match in his definition for the electric potential field. By correcting this obvious flaw in the model and extending it with a definition for the gravity field, we obtain **a**

simple, elegant, complete and mathematically consistent "theory of everything" without "gauge freedom", the fundamental theoretical basis for **Quantum Weirdness** which we must therefore reject.

Paul Stowe's Aether model

In their paper **The Atomic Vortex Hypothesis, a Forgotten Path to Unification (2013)**, Paul Stowe (see sidebar) and Barry Mingst provided a remarkable basis for come to a "Theory of Everything", an accomplishment which was not Einstein's lot to find. Their conclusions:

> In this paper we have attempted to show that by using the 19th Century's atomic vortex postulate it **is possible to construct a single simple model that encompasses all known physical processes**. We have **covered all major branches of physics** including kinetic, fluid, gravitation, relativity, electromagnetism, thermal, and quantum theory. It has being demonstrated that **anomalous observations** such as Pioneer's drag and the electron's magnetic **can be directly accounted for by the model**.
>
> Moreover we have identified **new physical effects** accounting for the **quantum hyperfine structure**, **galvanic potential**, the observed **Pioneer drag**, and the **anomalous electron magnetic moment**. We have also discovered **new physical relationships** such as how Boltzmann's constant is defined by Planck's action, charge, and light speed. This model **removes all arbitrarily defined units providing both Temperature (°K) and charge (q) with fundamental dimensions of mass, length, and time**. However the model is **incomplete**, as the details of vortex atomic structures remain undefined. What is very clear however that it cannot be point particles or even classic particles forming the basis of any atomic description in this model. I think it is clear, in light of evidence provided herein the Helmholtz, Maxwell, Kelvin atomic vortex hypothesis requires **serious reconsideration as a candidate model for unification of physical theories**.

In our **previous article**, however, we discovered that Maxwell did not actually use this "atomic vortex hypothesis" in his model, other than using it as an analogy. Maxwell abstracted the actual **vorticity** of the magnetic field and the medium away by defining only the resulting magnetic field **B** and keeping the magnetic vector potential **A** undefined. As we shall see, it is this "hole" in Maxwell's equations which led to numerous attempts to tape the hole over, from relativity all the way to currently popular **Quantum Weirdness**. In other words:

For the past hundred+ years, science has repeatedly attempted to extend the model with the popular duck-tape/chewing-gum of the decade, rather than correcting the model for an, in hindsight, obvious flaw: Maxwell's hole.

In the following, we shall consider how and where this hole can be found. Let us begin by following Stowe and define a vector field analogue to fluid dynamics, using the **continuum hypothesis**:

> *At a microscopic scale, fluid comprises individual molecules and its physical properties (density, velocity, etc.) are violently non-uniform. However, the phenomena studied in fluid dynamics are macroscopic, so we do not usually take this molecular detail into account. Instead, we treat the fluid as a continuum by viewing it at a coarse enough scale that any "small" fluid element actually still contains very many molecules. One can then assign a local **bulk flow velocity v(x,t)** to the element at point **x**, by **averaging** over the much faster, violently fluctuating Brownian molecular velocities. Similarly one defines a locally **averaged density** ρ(**x**,t), etc. These **locally averaged quantities** then vary smoothly with x on the macroscopic scale of the flow.*

We define this vector field **P** as:

$$\mathbf{P}(\mathbf{x},t) = \rho(\mathbf{x},t)\mathbf{v}(\mathbf{x},t),$$

where **x** is a point in space, $\rho(\mathbf{x},t)$ is the averaged **aether density** at **x** in [kg/m^3] and $\mathbf{v}(\mathbf{x},t)$ is the local **bulk aether flow velocity** at **x** in [m/s].

With this, we can apply **textbook fluid dynamics vector theory** in order to derive field and potential equations from the local bulk aether flow velocity vector field $\mathbf{v}(\mathbf{x},t)$, or $\mathbf{v}$ for short.

Helmholtz decomposition

Let us now consider the **Helmholtz decomposition**:

> *In physics and mathematics, in the area of vector calculus, **Helmholtz's theorem**, also known as the **fundamental theorem of vector calculus**, states that any sufficiently smooth, rapidly decaying vector field in three dimensions can be resolved into **the sum of an irrotational (curl-free) vector field and a solenoidal (divergence-free) vector field**; this is known as the **Helmholtz decomposition**.*

The physical interpretation of this decomposition, is that the a given vector field can be decomposed into a **longitudinal and a transverse** field component:

> *A terminology often used in physics refers to the curl-free component of a vector field as the **longitudinal component** and the divergence-free component as the **transverse component**. This terminology comes from the following construction: Compute the three-dimensional Fourier transform of the vector field F_v. Then decompose this field, at each point **k**, into two components, one of which points longitudinally, i.e. parallel to **k**, the other of which points in the transverse direction, i.e. perpendicular to **k**.*

It can be shown that performing a decomposition this way, indeed results in the Helmholtz decomposition. Also, a vector field can be uniquely specified by a **prescribed divergence and curl**:

> *The term "Helmholtz Theorem" can also refer to the following. Let $\mathbf{C}$ be a **solenoidal vector field** and $\mathbf{d}$ a **scalar field** on $\mathbf{R}_3$ which are sufficiently smooth and which vanish faster than $1/r^2$ at infinity. Then there exists a vector field $\mathbf{F_v}$ such that*
>
> $$\nabla \cdot \mathbf{F_v} = d \text{ and } \nabla \times \mathbf{F_v} = \mathbf{C}$$
>
> *if additionally the vector field $\mathbf{F_v}$ vanishes as $r \to \infty$, then $\mathbf{F_v}$ is unique.*
>
> *In other words, a vector field can be constructed with both **a specified divergence** and **a specified curl**, and if it also vanishes at infinity, it is **uniquely specified by its divergence and curl**. This theorem is of great importance in electrostatics, since **Maxwell's equations for the electric and magnetic fields** in the static case are of exactly this type.*

This is confirmed in **Bioelectromagnetism - Principles and Applications of Bioelectric and Biomagnetic Fields** by Jaakko Malmivuo & Robert Plonsey:

> *According to the Helmholtz theorem, **a vector field is uniquely specified by both its divergence and curl (Plonsey and Collin, 1961)**.*

And in **The Helmholtz Theorem and Superluminal Signals** by V.P. Oleinik it is stated:

> *The conventional **decomposition of a vector field into longitudinal (potential) and transverse (vortex) components** (Helmholtz's theorem) is claimed in [1] to be inapplicable to the time-dependent vector fields and, in particular, to the retarded solutions of Maxwell's equations. [...] The **Helmholtz theorem is proved in this letter to hold for arbitrary vector field, both static and time-dependent**.*

The "Laplacian"

Let us now consider the **Laplacian**:

> *In mathematics, the Laplace operator or Laplacian is a **differential operator** given by the **divergence of the gradient** of a function on Euclidean space. It is usually denoted by the symbols $\nabla \cdot \nabla$, ∇^2, or Δ. The Laplacian $\Delta f(p)$ of a function f at a point p, up to a constant depending on the dimension, is the rate at which the average value of f over spheres centered at p deviates from f(p) as the radius of the sphere grows. In a Cartesian coordinate system, the Laplacian is given by the sum of second partial derivatives of the function with respect to each independent variable. In other coordinate systems such as cylindrical and spherical coordinates, the Laplacian also has a useful form.*

[...]

> *The Laplace operator is a **second order differential** operator in the* n*-dimensional Euclidean space, defined as the divergence ($\nabla\cdot$) of the gradient (∇f). Thus if f is a twice-differentiable real-valued function, then the Laplacian of f is defined by*
>
> $$\Delta f = \nabla^2 f = \nabla \cdot \nabla f$$

It should be no surprise that the **Laplacian of a scalar field ψ** is defined exactly the same, as the **divergence of the gradient**:

$$\nabla^2 \psi = \nabla \cdot (\nabla \psi)$$

And since the divergence gives a scalar result, the Laplacian of a scalar field also gives a scalar result.

When we equate the Laplacian to 0, we get **Laplace's equation**:

$$\nabla^2 \phi = 0$$

> *Laplace's equation and Poisson's equation are the simplest examples of elliptic partial differential equations. The general theory of solutions to Laplace's equation is known as potential theory. The **solutions of Laplace's equation are the harmonic functions**, which are important in many fields of science, notably the fields of electromagnetism, astronomy, and fluid dynamics, because they can be used to accurately describe the behavior of electric, gravitational, and fluid potentials. In the study of heat conduction, the Laplace equation is the steady-state heat equation.*

It is also used in the **Wave equation**

$$\nabla^2 \psi = \frac{1}{v^2} \frac{\partial^2 \psi}{\partial t^2}$$

Vector Laplacian

The (scalar field) Laplacian concept can be generalized into vector form, the **Vector Laplacian**:

> *In mathematics and physics, the **vector** Laplace operator, denoted by ∇^2, named after Pierre-Simon Laplace, is a differential operator defined over a vector field. The vector Laplacian is similar to the scalar Laplacian. Whereas the scalar Laplacian **applies to scalar field and returns a scalar quantity**, the vector Laplacian **applies to the vector fields and returns a vector quantity**. When computed in rectangular cartesian coordinates, the returned vector field is **equal to the vector field of the scalar Laplacian applied on the individual elements**.*
>
> *The **vector Laplacian** of a vector field $\mathbf{F}$ is defined as:*
>
> $$\nabla^2\mathbf{F} = \nabla(\nabla\cdot\mathbf{F}) - \nabla\times(\nabla\times\mathbf{F})$$

Deriving "Maxwell's" equations from the first order Laplacian

Application of the vector Laplacian to the local bulk aether velocity vector field $\mathbf{v}$ gives:

$$\nabla^2\mathbf{v} = \nabla(\nabla\cdot\mathbf{v}) - \nabla\times(\nabla\times\mathbf{v})$$

Now let us work this out by writing out the above terms in their components and giving these their familiar names and historic signs. Thus, we define a vector field $\mathbf{A}$ for the **magnetic potential**, a scalar field Φ for the **electric potential**, a vector field $\mathbf{B}$ for the **magnetic field** and a vector field $\mathbf{E}$ for the **electric field** by:

$$\mathbf{A} = \nabla\times\mathbf{v}$$

$$\Phi = \nabla\cdot\mathbf{v}$$

$$\mathbf{B} = \nabla\times\mathbf{A} = \nabla\times(\nabla\times\mathbf{v})$$

$$\mathbf{E} = -\nabla\Phi = -\nabla(\nabla\cdot\mathbf{v})$$

According to the Helmholtz theorem, $\mathbf{v}$ is uniquely specified by Φ and $\mathbf{A}$. And, since the curl of the gradient of *any* twice-differentiable scalar field Φ is always the zero vector, $\nabla\times(\nabla\Phi) = \mathbf{0}$, and the divergence of the curl of *any* vector field $\mathbf{A}$ is always zero as well, $\nabla\cdot(\nabla\times\mathbf{A}) = 0$, we can establish that $\mathbf{E}$ is **curl-free** and $\mathbf{B}$ is **divergence-free**, and we can write:

$$\nabla\times\mathbf{E} = \mathbf{0}$$

$$\nabla\cdot\mathbf{B} = 0$$

For the summation of $\mathbf{E}$ and $\mathbf{B}$, we get:

$$\mathbf{E} + \mathbf{B} = -\nabla(\nabla\cdot\mathbf{v}) + \nabla\times(\nabla\times\mathbf{v}) = -\nabla^2\mathbf{v},$$

which thus gives the negated vector Laplacian for $\mathbf{v}$.

Since $\mathbf{v}$ is uniquely specified by Φ and $\mathbf{A}$, and vice versa, we can establish that with this definition, we have eliminated **"gauge freedom"**. This clearly differentiates our definition from the **usual** definition of the **magnetic vector potential**, which is defined along with the electric potential ϕ (a scalar field) by the equations:

$$\mathbf{B} = \nabla \times \mathbf{A}\,, \quad \mathbf{E} = -\nabla\phi - \frac{\partial \mathbf{A}}{\partial t}$$

[...]

> *The above definition does* ***not*** *define the magnetic vector potential* ***uniquely*** *because, by definition, we can* ***arbitrarily add curl-free components*** *to the magnetic potential without changing the observed magnetic field. Thus,* ***there is a degree of freedom available when choosing A****.*

With **our** definition, we cannot add curl-free components to $\mathbf{v}$, not only because $\mathbf{v}$ is well defined, but also because such additions would essentially be added to Φ, which encompasses the curl-free component of our decomposition.

With our definition, we can also establish units of measurement for the defined fields, since the local bulk aether flow velocity vector has a unit of measurement of meters per second [m/s]. For the electric potential Φ we get per second [/s], for the magnetic potential $\mathbf{A}$ we get radians per sec [rad/s], and for the electric and magnetic fields we get per meter second [/ms].

Now let us consider the difference between our definition and the textbook definition for electric potential:

$$\mathbf{E} = -\nabla\phi - \frac{\partial \mathbf{A}}{\partial t}$$

For the term $\frac{\partial \mathbf{A}}{\partial t}$, we get a unit of measurement of radians per second squared [rad/s^2], while the electric field has a unit of measurement in [/ms]. These obviously do not match, which means **Maxwell's definition for the electric potential is mathematically inconsistent**.

So, Maxwell's implicit use of the aether model not only **introduced an unwarranted "gauge" freedom** to the model, he also **introduced an unwarranted and inconsistent time derivative** of the magnetic potential to his electric field definition. And this is exactly why Maxwell's equations were found **not to be invariant to the Galilean coordinate transform** and thus a new coordinate transform had to be found in order to "correct" for this time derivative which should not even have been there in the first place. Well, that new transform was the **Lorentz transform** and the rest is history.

Deriving gravity from the second order Laplacian

In an **e-mail Paul Stowe sent me**, he wrote:

> Gravity for example is Grad E where E is the electric potential at x. This resolves to Le Sagian type process as outlined in the Pushing Gravity models.

As **Koen van Vlaenderen pointed out**, it does not make sense to take the gradient of a gradient, but the idea that gravity should be naturally included in our aether model in the form of a field derived from the electric field makes a lot of sense. This is also supported by experimental data around the **Biefeld–Brown effect**, even though recent confirmation attempts by **Martin Tajmar** yielded a null result.

Further, considering the **wave-particle duality principle** which states that particles are electromagnetic in nature, **there can be no other fundamental forces of nature but the electromagnetic** and therefore **gravity must be derived** from the field definitions for the electromagnetic fields.

In other words: the most logical approach to define gravity is to derive it from the electric field, completely analogous to the way we derived the electromagnetic fields from our bulk aether flow velocity field, namely by working our the second order Laplacian for v, which would be the Laplacian for E.

And since the electric field is defined to be curl free, the Laplacian for the gravity field is given by:

$$\nabla^2 \mathbf{E} = \nabla(\nabla \cdot \mathbf{E}) = -\nabla(\nabla \cdot (\nabla(\nabla \cdot \mathbf{v})))$$

Now let us work this out by writing out the above by defining a scalar field V for the **gravitational potential** and a vector field $\mathbf{G}$ for the **gravitational field** by:

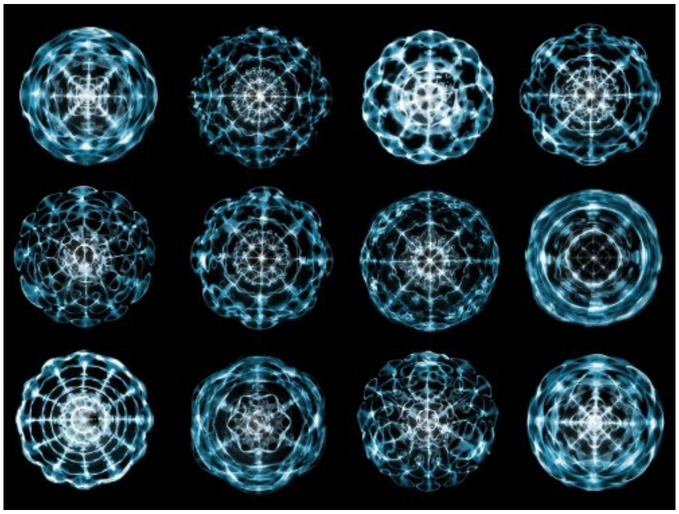
$$V = \nabla \cdot \mathbf{E}$$

$$\mathbf{G} = \nabla V = \nabla(\nabla \cdot \mathbf{E})$$

And since $\mathbf{G}$ is curl-free we can write:

$$\nabla \times \mathbf{G} = \mathbf{0}$$

This way, gravity is described as being **standing longitudinal waves**. And as you would expect, this matches exactly to experimental data in so called **Cymatics** experiments, which show how this works in water and other fluids. This picture makes clear that gravity should indeed be considered to be **standing longitudinal waves**:



By now it should be clear that the combination of gravity, **longitudinal standing waves**, and magnetism, **curl** or **vorticity**, are the dominant phenomena responsible for shaping atoms, molecules, solar systems, galaxies, etc., etc.

Theory of everything??

With this simple approach, we have already established that gravity is not a **fundamental interaction or force**. However, two other fundamental interactions have been defined, the "weak" and "strong" nuclear forces.

However, from Stowe's theory as well as the wave-particle duality principle, we know that particles are electromagnetic in nature. And since this is the case, **no other fundamental forces but the electromagnetic can exist.** And, it can be shown in the laboratory that magnetic forces are actually responsible for maintaining the geometry and shape of atom nuclei as well as their electron clouds, as has been done by David LaPoint:

Watch on YouTube, starting at 19:43

Herewith, we have established that with the equations derived above, we have indeed come to a complete "field theory of everything" covering **all known fundamental forces of nature**, namely the electromagnetic.

Now let us consider what a **Theory of everything** is considered to be:

> A theory of everything (ToE), final theory, ultimate theory, or master theory is a hypothetical **single, all-encompassing, coherent theoretical framework of physics** that fully **explains and links together all physical aspects of the universe**. **Finding a ToE is one of the major unsolved problems in physics**. Over the past few centuries, two **theoretical frameworks** have been developed that, as a whole, most closely resemble a ToE. These two theories upon which all modern physics rests are **general relativity (GR)** and **quantum field theory (QFT)**. GR is a theoretical framework that only focuses on gravity for understanding the universe in regions of both large-scale and high-mass: stars, galaxies, clusters of galaxies, etc. On the other hand, QFT is a theoretical framework that only focuses on three non-gravitational forces for understanding the universe in regions of both small scale and low mass: sub-atomic particles, atoms, molecules, etc. QFT successfully implemented the Standard Model and unified the interactions (so-called Grand Unified Theory) between the three non-gravitational forces: weak, strong, and electromagnetic force.
>
> Through years of research, physicists have experimentally confirmed with tremendous accuracy virtually every prediction made by these two theories **when in their appropriate domains of applicability**. In accordance with their findings, scientists also learned that GR and QFT, as they are currently formulated, are **mutually incompatible – they cannot both be right**. Since the usual domains of applicability of GR and QFT are so different, most situations require that **only one of the two theories be used**. As it turns out, this **incompatibility between GR and QFT** is apparently only an issue in regions of extremely small-scale and high-mass, such as those that exist within a black hole or during the beginning stages of the universe (i.e., the moment immediately following the Big Bang). To resolve this **conflict**, **a theoretical framework revealing a deeper underlying reality**, **unifying** gravity with the other three interactions, must be discovered to **harmoniously integrate the realms of GR and QFT into a seamless whole: a single theory that, in principle, is capable of describing all phenomena**. In

> pursuit of this goal, quantum gravity has become an area of active research.

Our theory undoubtedly qualifies as being "**a theoretical framework revealing a deeper underlying reality**" and it is also "a single theory that, **in principle**, is **capable of describing all phenomena**" and therefore it qualifies for being called a "Theory of everything", especially since it is also testable. Paul Stowe and Barry Mingst **have already shown** that with this **framework**, a number of anomalies can be resolved and we **propose a number of experiments** as well.

Furthermore, in our **background article**, we have explored the history of how the current standard model came to be and explained the fundamental ideas which led to the discovery of "Maxwell's hole" and explained how the "mutually incompatibility" between GR and QFT traces right back to "Maxwell's hole" as well as how this led to the concept of "compressibility of the medium" having been expressed by GR in the form of "compressibility of time".

In other words: **we have proposed that with a simple and straightforward revision to the foundational framework of the standard model, Maxwell's equations, we can naturally reveal a deeper underlying reality which, in principle, is capable of describing all phenomena**.

Isn't this in contradiction to Maxwell's theory?

Since our model is a **revision** of Maxwell's, it's obviously not the same. So, in that sense, one can say it's a non-Maxwellian model. In practice, however, the field definitions **should** lead to the same predictions as Maxwell's insofar as currently "empirically verified'. And no, we have not yet worked out c.q. shown how our definitions relate to Maxwell's. Our model promises to solve **a fundamental problem** we have identified in Maxwell's model, which we refer to as the **"recursive problem"**.

In our **historical background article** this problem is referred to as a "non sequitur" issue:

> This illustrates the "non sequitur" issue we encountered above, namely that electromagnetic waves are considered to be produced by moving "charged particles", while these particles show this "wave particle duality" behavior themselves, as does "EM radiation" on it's turn. In other words: **electromagnetic radiation is essentially considered to be produced by movements of "quanta" of electromagnetic radiation**, called either "photons" or "particles". Kind of a dog chasing it's own tail, or **recursion** as software engineers call it.

So, what we argue is that our approach does not contradict Maxwell's theory (insofar as empirically verified), because the concept of "charge", being a property of certain particles, should be introduced at the **particle modelling** level and NOT at the **medium modelling** level.

In other words: because we have identified a recursive problem in the logical inter-relations between Maxwell's charge definition and that of "particles" or "photons", the **concept of charge should not be included in the field model** for logical reasons.

It should also be noted that, despite the **Maxwell equations only describing one type of electromagnetic waves**, actually **at least two** types of electromagnetic wave phenomena **are known to exist**, namely the **"near" and the "far" field**. Since our theory predicts transverse surface waves as well as expanding vortex rings to exist, it is clear that, at least in this regard, our theory promises to explain this phenomenon in a natural way, while Maxwell's theory does not predict it at all.

More on this in the **FAQ**.

Conclusions

By working out standard textbook fluid dynamic vector theory for an ideal, compressible, non-viscous Newtonian fluid, we have established that **Maxwell's equations are mathematically inconsistent**, given that these are supposed to describe the electromagnetic field from the aether hypothesis. Since our effort is a direct extension of Paul Stowe and Barry Mingst' aether model, we have **come to a complete mathematically consistent "field theory of everything"**. And we found "Maxwell's hole" to be the original flaw in the standard model that led to both relativity and Quantum Mechanics, which should thus both be rejected.

Notes and FAQ

A few words about Steemit

From WikiPedia:

> **Steemit** is a social news service which combines a blogging site/social networking website, and a cryptocurrency, known as Steem.
>
> The general concept is similar to other blogging websites or social news websites like Reddit, but the text **content is saved in a blockchain**. Images and other multimedia content must be embedded from other websites.
>
> Members can **upvote good content**, and the **authors who get upvoted can receive a monetary reward** in a cryptocurrency named Steem and two other tokens named Steem Dollars and Steem Power. People are also rewarded for curating popular content. Curating involves upvoting submissions and comments.

I recently discovered **Steemit** and I like it a lot, because whatever you put on there is remembered on the "blockchain" and, contrary to other social media who make money with YOUR contributions, with **Steemit** it is YOU who gets paid for your contributions.

So, I would encourage everyone to check this out and consider subscribing, which is free. At this moment, you can only do so when you have a Facebook account because they don't want people to subscribe multiple times. And this is because you get an amount of "Steem" worth about $5 for free, so you can participate in the community for instance by **upvoting** my articles.

If you decide to check it out and subscribe, I would really appreciate if you upvote my articles over there:

- **My personal introduction.**
- **On Space, Time and the Fabric of Nature.**
- **Free Energy: The Cole-Hackenberger (Gray) Power Supply - An analysis of the working principle behind this device.**
- **Steemit Poll: Quantum Magic or Pseudoscientific Crackpottery?**

Abstract posted at **LinkedIn**, **thunderbolts.info** and **energeticforum.com**.

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