

# Our Plasma-Electromagnetic Sky

Application of Hollow-Expanding-Growing-Electromagnetic Earth Hypothesis with particular respect to the Earth's Atmosphere starting from the Lithosphere and ascending Altitude.

Sf. R. Careaga, BSEE, MSTOM

Ancient Kentucke Historical Association, Lexington, KY, USA

May 27, 2018

## ABSTRACT

The Plasma-Electromagnetic Sky (PEMS) and HEGEME work synergistically. PEMS, as it relates to Earth is a part of the HEGEME hypothesis, however it is also by extension part of the Solar System Circuit (SSC), which is part of the Galactic Electric Circuit (GEC). In essence, the four levels are divisible into two: Spheres of Heaven and Spheres of Earth, which are nothing more than charge differentiated layers. Plate Tectonics is enhanced, and reframed as a membrane interaction between solids (mineral/bedrock) and gases (atmospheres), which in between is aided by a liquid-organic chemistry. Guided by the five groups of the laws of physics: Energy, Thermodynamics, Motion, Electromagnetism, and Life, this chemistry and electromagnetic interaction of energy-mass is therefore able to explain by-in-large all sorts of difficult coincidences without invoking pseudo scientific hypotheses. Instead, the cosmology is simplified, and reified into a natural cosmology of continuous extension from an active, churning core of complex chemical interaction into the cosmos, and then returns again via plasma currents (Birkeland currents, aka magnetic reconnection flux tubes), towards the Earth's poles, re-constituting a cycle of energy, life, and chemistry.

*Keywords:* Expanding Growing Earth - Electromagnetism - Plasma - Ionosphere - Structured Water - Structured Atom - Starwater - Langmuir - Marklund - Z-pinch - Auroras

<b>Introduction</b>	<b>3</b>
<b>HEGEME Theory</b>	<b>6</b>
Hollow Earth	8
Table 1 - Relative Speeds of Sound (short list)	11
Table 2 - Relative Abundance of elements in Solar System, atoms/ 106 parts silicon	12
Expanding Earth	13
Growing (Gaia) Earth	16
Electromagnetic (Transformer) Earth	18
<b>The Plasma Electromagnetic Sky Theory (PEMS)</b>	<b>23</b>
The Purple Sky Hypothesis and Zep Tepi	25
Jeurgens Model	26
Scott Model	27
Alfven Magnetics Tunnels Discovered	29
Starwater	33
<b>Plasma Universe Cosmology</b>	<b>35</b>
Langmuir-Birkeland Plasmas	37
Plasma Double-Layers (Sheaths)	37
Jupiter and Saturn	40
Scott's Counter-Rotating Earthen Auroras Prove Birkeland Right	43
Table 3 - Ratios of large satellites/planetoids to Earth-masses	44
<b>Spheres of Earth</b>	<b>44</b>
Membrane Earth	45
<b>Spheres of Heaven</b>	<b>47</b>
Sprites, Elves, Pixies, and Gnomes	50
<b>Conclusion</b>	<b>52</b>
<b>Appendix A - Glossary of Terms</b>	<b>53</b>
<b>Appendix B - Known Physical Laws of the Universe</b>	<b>61</b>
I - The Laws of Energy	61
II - The Laws of Thermodynamics	61
III - The Laws of Motion and Gravity	62
IV - The Laws of Electromagnetism	63
V - The Laws of Life	63
<b>Appendix C - References</b>	<b>65</b>

# Introduction

Only forty to fifty years ago, the diagram of the Earth's atmosphere was relatively simple in its presentation. Clouds belonged to certain layers (see Figure 1), and it was understood that air density decreases with altitude at a linear rate. The auroras were the strangest thing about the atmosphere. Meteorology had simple explanations for vortices (such as tornadoes) involving hot and cold air masses that converged, and through convection formed tubes which then stood upright. Heat and the coriolis effect defined the movement of vortices (such as hurricanes) on Earth. Terrestrial lightning was cloud to ground, and so called "ball lightning" was a myth.

In 2018, the accepted image of the Earth has become radically different (see Figure 2). In some ways it is complicated by hidden magnetic and electric current features. In other ways, there are forms of vortices (such as those associated with fires, volcanoes, and on water) and lightning (such as ash, and stratospheric sprites) that rewrite the known laws of how things "ought to work." Slow motion camera technology, and multispectral capture devices have radically challenged our understanding.

However, attitudes about these changes are slower to change, as "first impressions last longer." The adage that it is more difficult to unlearn a falsehood than to learn a new 'truth' becomes a serious impediment to understanding the paradigm shift Science finds itself in. While the evidence mounts daily, at a geometric rate, for our Plasma-Electromagnetic universe, Big Bang theorists and Uniformitarianism fight twice as hard to modify all the associated pseudoscientific (mathemagical/unfalsifiable) hypotheses (such as  $\Lambda$ CDM and Black Holes) in order to cope with every side alteration. Meanwhile, plasma high energy physics provides ready clues relating to the naturalness of discussing multi-celestial body interactions which will yield several forms of perspective altering interactions:

1. Energy sources other than convection and mechanical motion.
2. Replacement for fusion furnaces (and yes: 'cold fusion' 'furnaces').
3. Unique chemistry (such as star-water formation of water and EZ water<sup>1</sup>).
4. Forces and thermal sources other than gravity and tidal pull.
5. Common circuit analysis features, such as voltage, current, resistance, capacitance, and inductance.
6. Transformer behaviors.
7. Connections (hitherto called "ropes", although they are co-axial [Birkeland] currents<sup>2</sup>).
8. Mechanisms for massive geological changes in spurts between long spells.
9. Production of new minerals and fuel deposits.
10. Mechanisms for massive catastrophes for which vast evidence now overwhelms all objections.<sup>3</sup>

In this paper, both the HEGEME theory, laid out in minor detail in the previous paper, "Unboxing Atlantis" [3] and the Plasma-Electromagnetic Sky (PEMS) will be discussed in greater detail than could be allowed for in the original Extended-Plasma-Electromagnetic Cosmology paper (EPEMC). The HEGEME and PEMS hypotheses are sub-hypotheses to EPEMC, and as such are also conglomerations of ideas related to the works of several scientists and researchers. In some cases, these scientists and researchers diverge wildly about their beliefs, and even antagonistically. However, no one man or woman can know all about this mysterious planet, solar system, or universe. By utilizing the benefits of ancient philosophical framework, and historical scientific background,<sup>4</sup> it will be easier to create the nebulous Venn diagram of "truth" which has thus far eluded Science.

---

<sup>1</sup> "The Fourth Phase of Water," Pollack, <https://www.youtube.com/watch?v=i-T7tCMUDXU>

<sup>2</sup>"The jets of AGN as giant coaxial cables," Gabuzda et al., 2017, <https://arxiv.org/pdf/1712.08414.pdf>

<sup>3</sup> Mainstream Science even acknowledges that celestial bodies must collide within our solar system, as discussed in myth. <https://www.nature.com/articles/d41586-018-04728-7>

<sup>4</sup> "Hindsight is 20/20"

Accompanying the paper are three appendices. Appendix A is an Index of common terms. Appendix B is a reworked definition of some of the foundations of physics (such as Newton's Laws), and where needed other philosophical "roundings out" that are currently missing from physics but observed in nature. Appendix C is the final citations and references, reproduced in part from "On the Origins of Religions" [2] and from EPEMC paper [1].

This paper will by no means be exhaustive of the topic entitled. In some cases it will serve to provide new ideas, and in others, to provide a summary of current knowledge and comparative study of trend (or fringe) ideas.

The companion to this paper, "The Magnetic Universe,"<sup>5</sup> will also serve as a background in history and comparative model contrast (similar-dissimilar). PEMS theory follows upon the footsteps of 150 years of hard, laboratory based science and geological record. It follows, then, that a small paper cannot function as a replacement to the work of so many eminent men and women that revolutionized humanity. However, such a history and background is easily overlooked in the hype and hubbub of high energy particle [metaphysics, and [mystic] astrophysics where supposedly "new" objects are postulated, mathematically predicted (lit: made up<sup>6</sup>), and "found" almost daily.<sup>7</sup>

Lab work is comparatively more difficult (and dangerous, for both career and health) than computer sciences and mathematics, and the reward is not usually of the same notoriety. Therefore the rich history of plasma-electromagnetics (and quantum electrodynamics) remains "shelved" instead of a topic in universities and PBS/NOVA documentaries for high schoolers to watch. Mass media indoctrinates audiences to science fiction (such as black holes and neutron stars) while neglecting concrete work (such as terrella experiments). Therefore, this history is frequently overlooked.

However, at this time modern astro-meteorology and solar system dynamics are rewriting physics from the top, down. There can no longer be any doubt that the mainstream is moving towards grasping charge separated in space, and a re-calibration of even solar physics from fusion reactions to something far more intricate and *illuminating*. Our place in the cosmos, and the role of celestial bodies, including their [supposed] births and deaths, are starting to be better understood, along with all analogies to life, as conforming to the greater Laws of Energy (see Appendix B.I).

Taking this into context, the author wishes to welcome the readership to perhaps their first viewing of the Plasma-Electromagnetic Sky and Earth.

*"In those days, in those distant days, in those nights, in those remote nights, in those years, in those distant years; in days of yore, when the necessary things had been brought into manifest existence, in days of yore, when the necessary things had been for the first time properly cared for... when the heavens had been separated from the earth, when the earth had been delimited from the heavens,..."* 1-26, *Epic of Gilgamesh*<sup>8</sup>

---

<sup>5</sup> "The Magnetic Universe," Sf. R. Careaga, 2018

<sup>6</sup> [https://en.wikipedia.org/wiki/Fifth\\_force](https://en.wikipedia.org/wiki/Fifth_force)

<sup>7</sup>

<https://www.independent.co.uk/news/science/black-holes-milky-way-space-discover-galaxy-columbia-university-a8288621.html>

<sup>8</sup> "Epic of Gilgamesh, Version A", <http://etcsl.orinst.ox.ac.uk/section1/tr1814.htm>

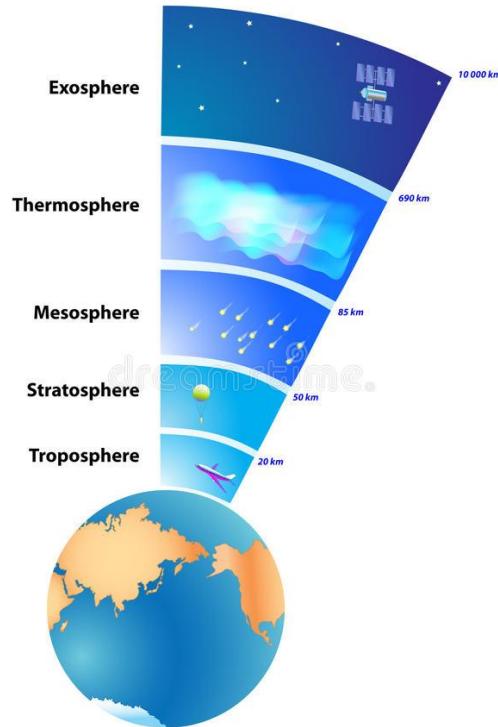


Figure 1 - Earth's Atmospheric Shells

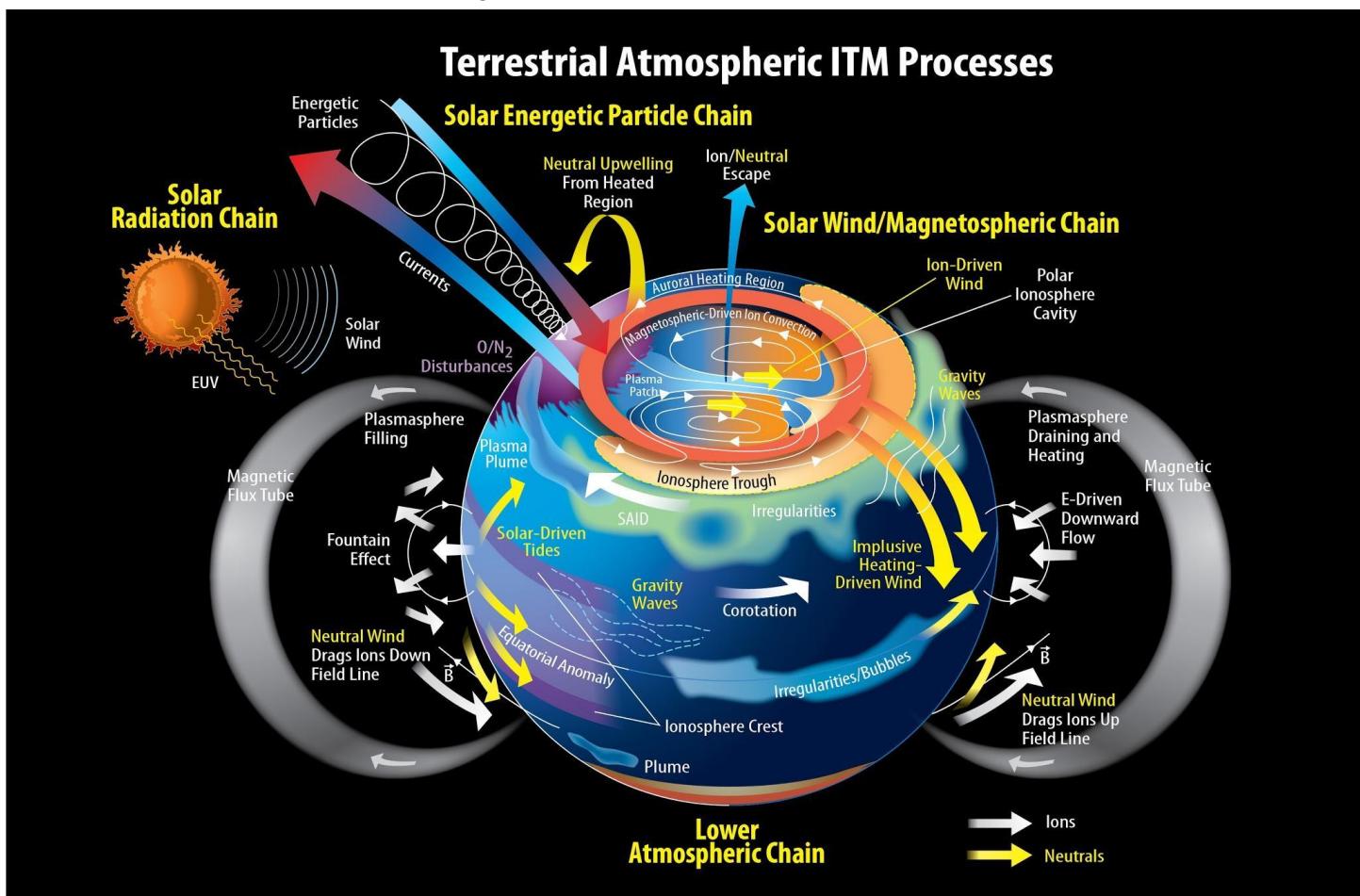


Figure 2 - Terrestrial Atmospheric Processes (in part); credit: NASA<sup>9</sup>

<sup>9</sup> <https://svs.gsfc.nasa.gov/4641>

# HEGEME Theory

HEGEME is more rightfully Hollow+Expanding/Growing+Plasma/EU Earth. However, one cannot simply combine these various alternative theories without modification and enhancement. Where one will be weak, another may provide a mechanism. For example, although P waves may support a non iron core it does not, strictly speaking, support a true *hollow* Earth. Nor is it necessary. The main point is that the Earth is not an iron core or a fusion reactor (in the atomic bomb sense). Though pressure and heat may increase as the depth increases, gravity does not. It peaks in the outer mantle and then decreases until reaching exactly 0 (or near to it enough) at the very center.

What is found, however, is water, and plenty of it, albeit in a highly toxic and non life-supporting form. This water appears to “leak” to the crust by combining with magma, and undergoing unique chemical processes, before emerging as a dense soup at the bottom of the ocean, where it pools.

This helps the Hollow Earth (HE) theory with an issue of collapse. Equalized pressure and “outgassing” provide a means for general shell stability, whereas without it, any serious analysis of centrifugal behaviors will yield too many inevitable collapses to be believed. Such collapses *do* occur [3], but they don’t happen each and every day or month. There are outward pressure forces which defy the iron core (nearly fusion reactor) level inner direction proposed in mainstream geology and volcanology.<sup>10</sup>

However, such forces *cannot* be believed to have magically been met with equal contraction to create a permanent homeostasis of size.<sup>11</sup> There is clear, concise, and definitive geological record for expansion along a 40,000 mile (64,000 km) crack of rifts throughout the very young ocean floors. Some of these floors *vastly* expand at rates far exceeding the subduction zone “swallowing.”<sup>12</sup> The various changes in direction of the plates in recent (indeed single human lifetime) history<sup>13</sup> seem to indicate the growth forces are active, dynamic, and accelerative (some increasing in areas, some decreasing).<sup>14</sup>

But there is a problem of the Expanding Earth (EE) theory. It is, chiefly, a gravity problem.

Paleontological record shows a clear decrease in average fauna size, especially after the dinosaur extinction. . Only ocean buoyancy has enabled megafauna to truly thrive at the titanic sizes seen in the Triassic and Jurassic. However, the increasing gravity phenomenon is weak in foundation of spherical geometry. Although the crust and mantle may have thinned and caused a general density of Earth mass on the outer shell, therefore allowing an increase in size, it is difficult to believe that all of the increased mass is attributed to larger shell size, as gravity decreases by the radius *squared*. There must be a co-existing increase in *mass* as well.

Mass is generally ill-defined in physics, however it is related to the quantity of matter, and the charge density (energy), and to the frequency of vibration (via energy). It can be expected, therefore, that three things are true about the Growing Earth (GE):

1. The GE explains the rapid collapse of landmasses and creation of vast oceans.

---

<sup>10</sup> <https://physics.stackexchange.com/questions/330028/pressure-and-gravity-at-the-center-of-the-earth>

<sup>11</sup> The improbability of this is, at present time, impossible to calculate due to the number of unknown variables. Mankind has never drilled past the depth of the crust to the mantle, and all that we know of mantle forces and pressures are found through volcanic studies of magma, movement, and magnetism. Although many mechanisms are proposed, they cannot be tested directly. Although one can compute the approximate gravity at any place on Earth, assuming certain spherical properties (in reality gravity measurements do reveal great variations even on the Earth’s surface), pressure cannot be generally assumed as composition and therefore density will vary significantly all the time and at different depths.

<sup>12</sup> 5-13cm/year spread vs. 0-3 cm/year averaged (subduction happens in fits and starts, due to big earthquakes).

[https://en.wikipedia.org/wiki/Seafloor\\_spreading](https://en.wikipedia.org/wiki/Seafloor_spreading) and [https://en.wikipedia.org/wiki/Mid-ocean\\_ridge](https://en.wikipedia.org/wiki/Mid-ocean_ridge)  
[https://geosci.uchicago.edu/~rowley/Rowley/Publications\\_files/GSABRidgeProduction.pdf](https://geosci.uchicago.edu/~rowley/Rowley/Publications_files/GSABRidgeProduction.pdf)

<sup>13</sup> <https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2011GC003751>

<sup>14</sup> <https://www.sciencedirect.com/science/article/pii/S0012821X18301432>

2. The rise in water volume and sea level are to be expected as the water-producing core is burgeoning with new water from the movement of Earth from a small Brown Dwarf binary system (Saturn-Jupiter) towards a Main Sequence Star (MSS): Sol.
3. The GE forms high pressure rift zones and high tension subduction zones collectively, creating highly tense plate tectonic forces which can shift or slide rapidly, or collapse under changing magma+water convective bubbles (hotspots), such as at the Azores, Doggerland, Zealandia, Tamil Massif, etc...
4. The GE rift zones are cooled quickly by the water interacting at the membranous layer (for life needs membranes to be truly alive) of the crust, and the collapsing solid weight, and water pressure at ocean depths, forms a “double layer” of pressure that stabilizes the outward convective mantle forces with the inward weight+atmospheric pressure upon the crust.
5. In Uniform periods, these cause buckling, overthrust, dome formations, and faults which break the cohesiveness of continental formations,
6. When celestial bodies are near, the increased growth bubbles and outer electro-gravitic forces lift and slide the skin-thin membranous crust, sometimes violently (such as India and Madagascar), creating massive land and ocean crust upheavals.
7. When Cosmic Ray Events (CREs) occur, the GE accelerates, and the production of more matter (from constituent subatomic particles), plasma “wind” and neutrino radiation, increases the mass as well as slows the rotation, thereby explaining the slowing of the Earth’s rotation from 360 days to 365.26 over the last 12,000 years during the most recent surge in size growth.<sup>15</sup>

Finally, the EGE duet must rely on a strong scientific core. There is, fortunately, one to be found in the Plasma-Electromagnetic hypothesis. Plasma is the first state of matter, accounting for 98% of all matter in the Universe.<sup>16</sup> Electromagnetism, now Electroweak Force<sup>17</sup> as well, succinctly defines the **one Force** that guides behavior in the Universe (and possibly Uni-Multiverse). It defines gravitic waves (Poincare), light (EMF), electric arc discharge, and the internal interactions of particles and subatomic species (like quarks), which are measured in electron-volts (eV). The behaviors of particles as waves is explainable in terms of wave-particle dualities if necessary, or simply as waves (therefore reducing the force to mere magnetic interactions). However, the moving current of inconceivable charges (as inconceivable a concept as “energy”) provides concrete proof of *energy in action*, and provides a dualistic behavior which defines reality itself. The primordial yin/yang.<sup>18</sup> Plasma has several modes of operation<sup>19</sup> before breaking down to lower energy states of gas,

---

<sup>15</sup> To picture this, it may be helpful to visualize tomatoes on a vine. The vine represents the cosmic rays and solar wind, directed as Birkeland currents into the north and south poles (in and out). Though the transformer effect will enable Earth to also release voltage back into the solar system circuit (SSC), some of the particles will remain trapped in the heavy water core, much as is used in fission reactor chambers. These will result in accelerating growth. Towards the end of a ripening tomatoes vine-time, massive fault splits (rifts) form in the outer layer of the tomato, and the fruit will bulge in some areas more than others creating valleys and peaks in fruit surface. The tomato may sag and fall from the vine, as the life-circuit determines it is time to cut the losses, or the structure fails. Is it possible that after a celestial body grows to this point around dwarf host stars (from which they had originally exfoliated), that they reach electrostatic equilibrium and are pushed out? If Earth reached this maximum with Saturn-Jupiter in the 12,000 - 4,000 YBP era, how long will the Earth remain on the Solar vine?

<sup>16</sup> ~50% free baryonic “wind”, 16% Liquid Metallic Hydrogen and Helium stars, and 34% may be a combination of black body “hot jupiter” exoplanets and plasma in dark mode (actual Dark Matter). The role of cosmic “dust” is increasing in the discussion of so called “Dark Universe” characteristics.

<sup>17</sup> <https://www.britannica.com/science/electroweak-theory>

<sup>18</sup> In point of fact, the yin+yang was first postulated due to an angular view of a Birkeland Current, and Tao/Hundun was the result of the charged comet-tail of Venus, and the electric “thunderbolt” interactions of Jupiter with it (Zeus fighting Phaethon).

<sup>19</sup> Dark mode, Glow mode, Arc mode, Birkeland Current Mode, Marklund Convection Mode, Bennet Z-pinching, AGN Jets

liquid, and solids. At each of these the outer manifestations of *the Force* change, especially as accords with scale, presenting challenges to identifying the otherwise conspicuous continuity between each of them.<sup>20</sup>

Because the interaction of the HEGEME depends on the PEMS and the PEMs depends upon the HEGEME, the following sections will spend time in developing our model and understanding of the HEGEME so that a better picture of the PEMs will become a matter of course.

## Hollow Earth

The typical earth model is shown in figures 3 and 4. The typical HE model is shown in Figure 5. Both of these appear problematic. In the first, wave behaviors of the deep core present speed issues<sup>21</sup> and reflection issues do not support an iron core. In the second, there is a lack of outward pressure source. The solution, presented in Figure 6 yields a more accurate truth: we don't know precisely what is happening inside the core, but there appears to be the generation of water, which is carried upwards via convection to the upper mantle.

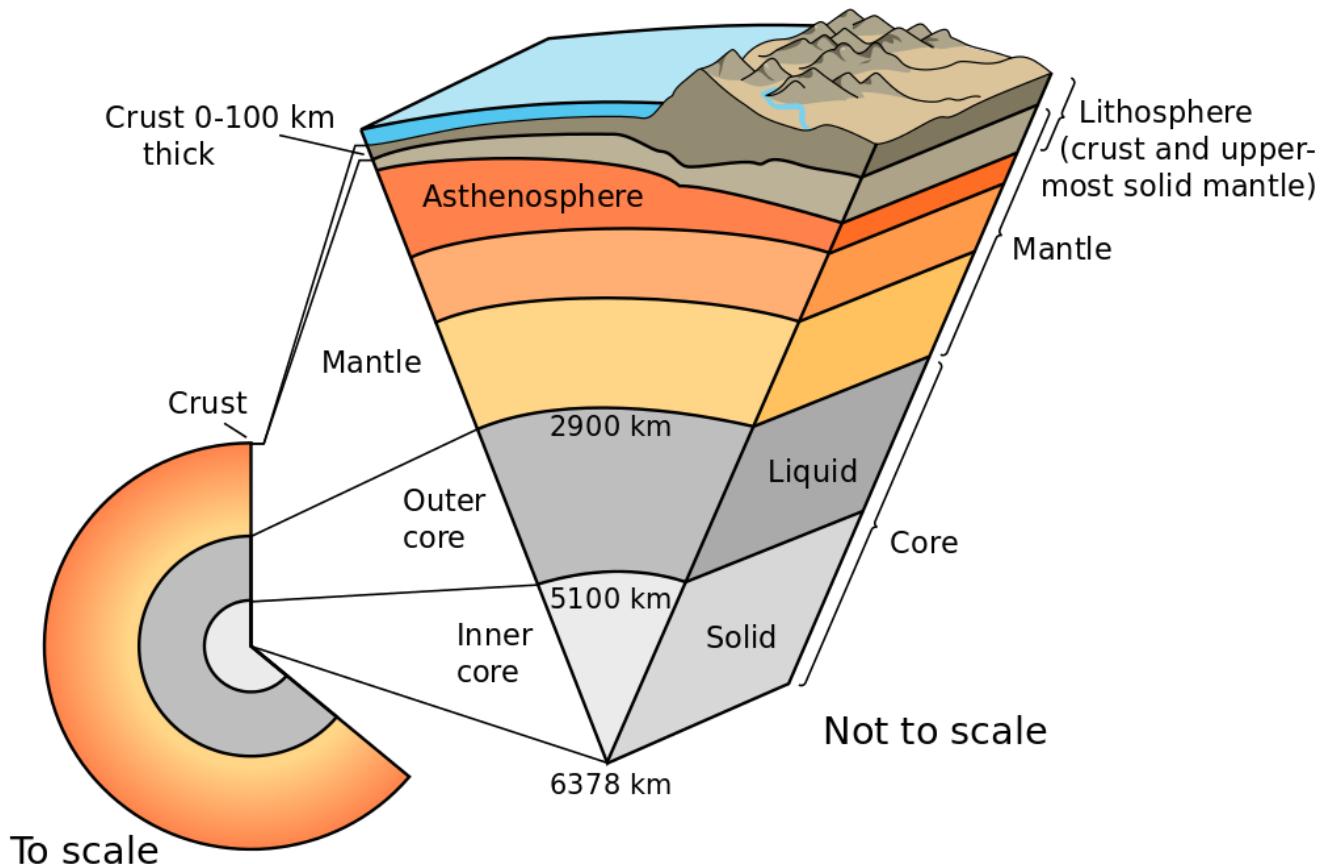


Figure 3 - Standard Geology model of the Earth; credit: SEG Wiki

How do we know that the core is **not** iron? It is a very interesting history that analysis of the P waves and S waves have been interpreted to be a matter of dense iron-nickel in liquid form. Later, a solid outer core was postulated based on improved seismic techniques and observation. However, both make little sense otherwise.

<sup>20</sup> The continuity is obvious due to phase changes, which are, of course, quite discontinuous; also the changing behaviors of quanta vs. particles vs. atoms vs. molecules vs. colliding bodies shows continual alteration of EMF 'shape-form'.

<sup>21</sup> Iron is an excellent conductor. [http://www.columbia.edu/~vjd1/earth\\_int.htm](http://www.columbia.edu/~vjd1/earth_int.htm) The core must be dense and slow down the waves.

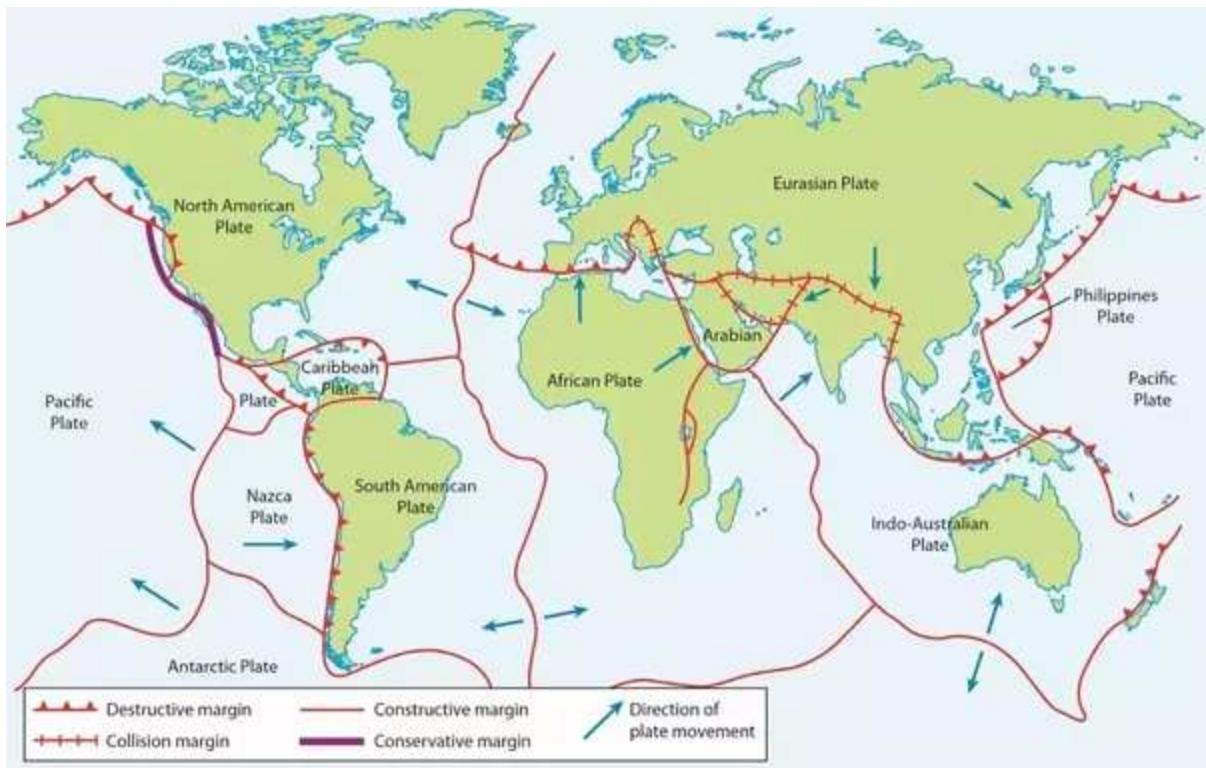


Figure 4 - Tectonic Plates of the Earth<sup>22</sup>; credit: M Sargeant

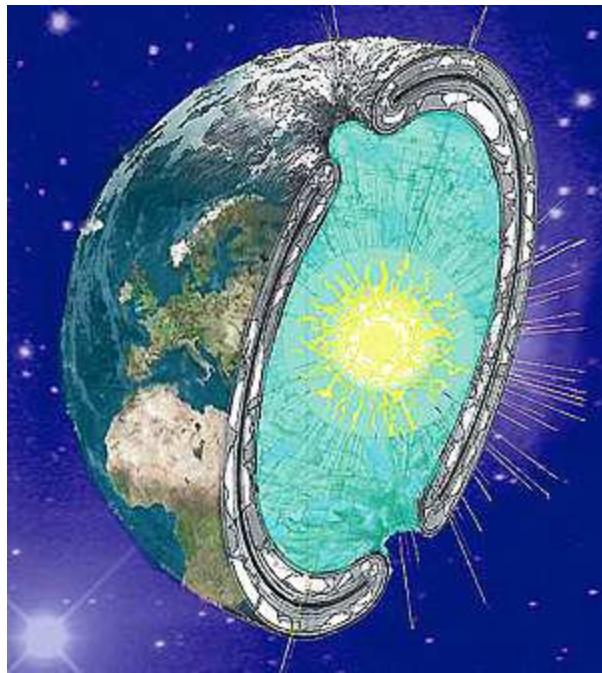


Figure 5 - Typical example of Hollow Earth<sup>23</sup>; a fantasy not endorsed by this author

<sup>22</sup> Note: the rifts are shown as places where the arrows go away from each other. Also note that the subduction zones displayed are extremely exaggerated, and the actual length of subduction faults is significantly less than shown. This map shows more of an “idea” of them. But in reality, at the places where subduction occurs it is because it is forced to, and significant overthrusting is occurring like a Blues Brothers car pileup. There are also more plates than shown. See below for a more detailed map.

<sup>23</sup> Credit: D Robbins, <http://homepages.uc.edu/~harmonti/hollow/>

# Earth Core Diagram

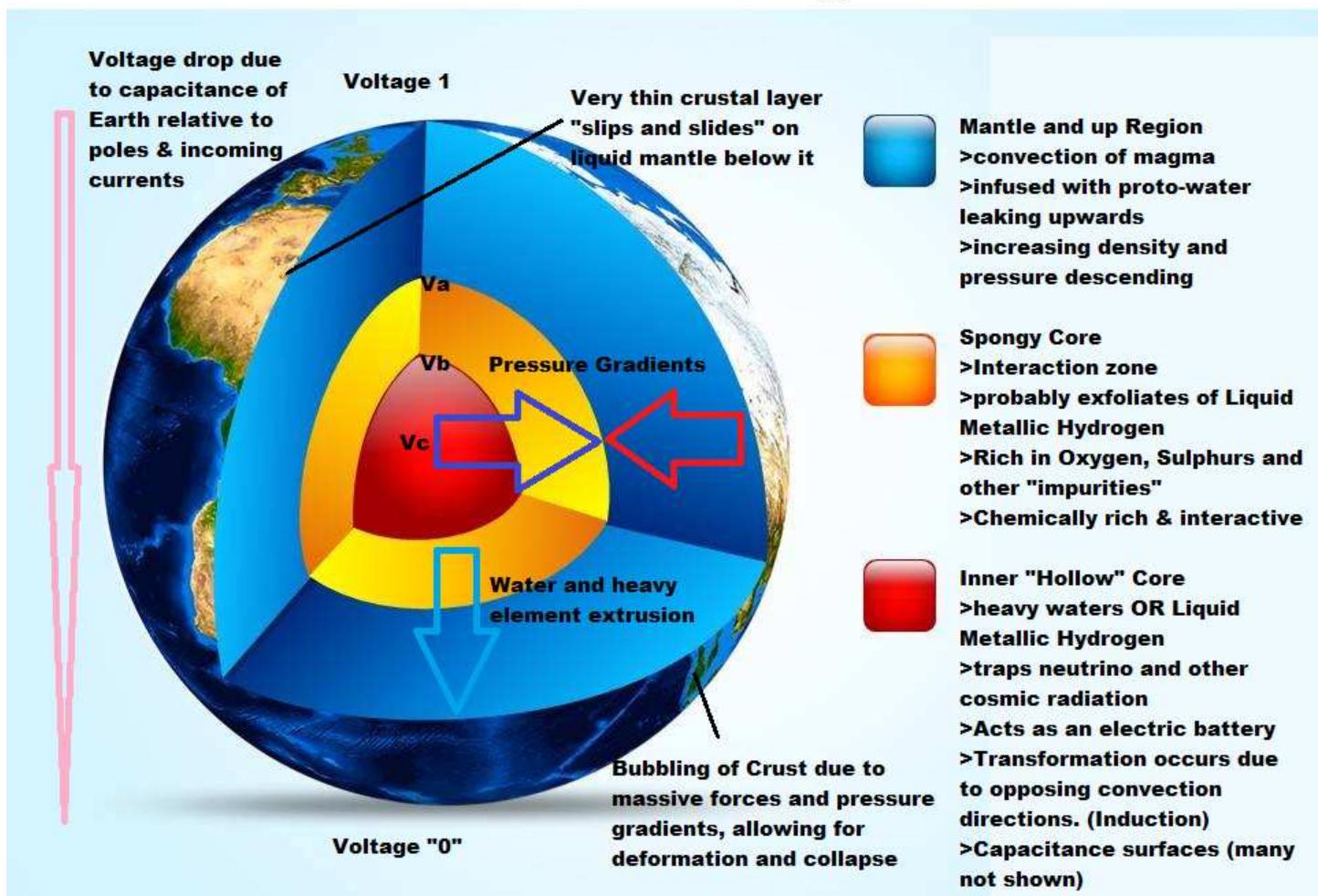


Figure 6 - HEGEME; basic level model; Careaga

To quote the previously named article,

### **"670 km Seismic Discontinuity**

*Below the low velocity zone are a couple of seismic discontinuities at which seismic velocities increase. Theoretical analyses and laboratory experiments show that at these depths (pressures) ultramafic silicates will change phase (atomic packing structure or crystalline structure) from the crystalline structure of olivine to tighter packing structures. A discontinuity at around 670 km depth is particularly distinct. The 670 km discontinuity results from the change of spinel structure to the perovskite crystalline structure which remains stable to the base of the mantle. Perovskite (same chemical formula as olivine) is then the most abundant silicate mineral in the Earth. The 670 km discontinuity is thought to represent a major boundary separating a less dense upper mantle from a more dense lower mantle. [sic]" (see Figure 7)*

*"That material must be dense: it must be denser than the mantle, and it must be dense enough to account for the rest of the mass of the Earth. Since the core makes up about one-third of the Earth's mass it must be a material that is common in the solar system. It must account for the observed seismic velocities. It should also be a material with magnetic properties to account for the Earth's magnetic field. Iron is the obvious candidate." (see Figure 8)*

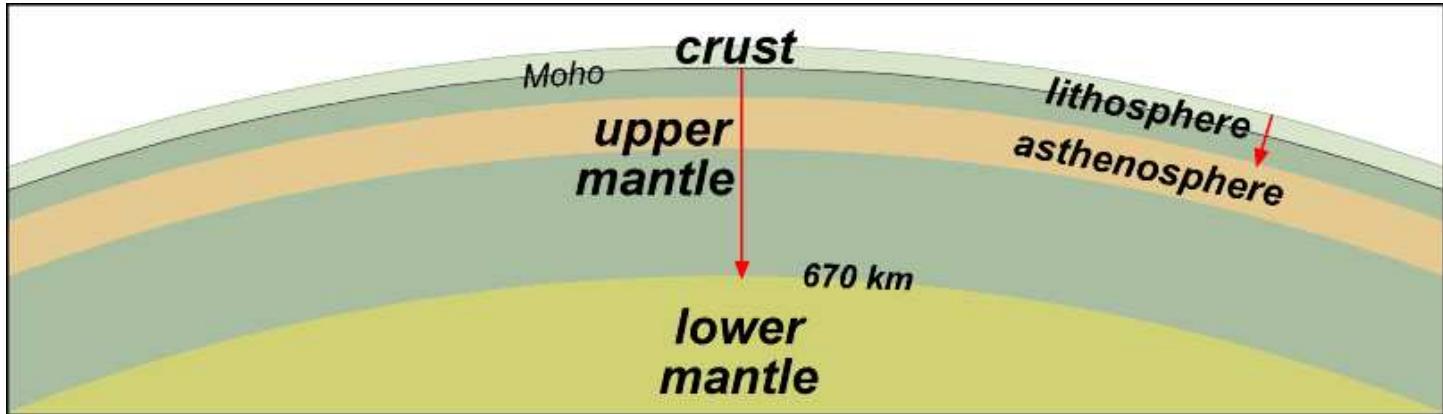


Figure 7 - 670km boundary; credit: Columbia University

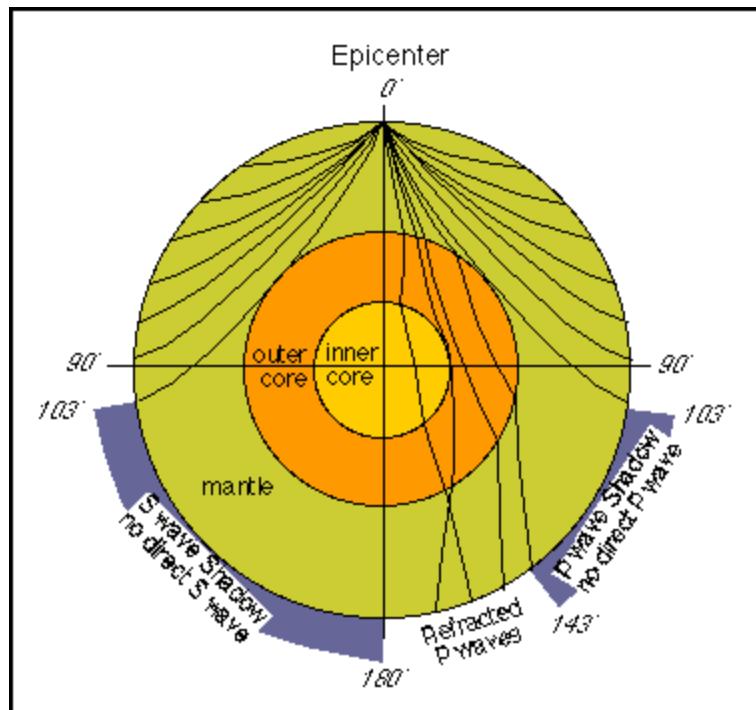


Figure 8 - Seismic Wave mapping and refraction; credit: Columbia University

Does it make sense to attribute this to iron (Fe), though? Iron is actually not *that* abundant in the solar system. However, hydrogen is, and so is oxygen. Below is a relative table of speeds of sound through iron, air, Earth's crust, and water. Followed by a table of relative abundance of elements in the Solar System (where spectroscopy is going to be the most reliable due to closeness of celestial bodies).

Table 1 - Relative Speeds of Sound (short list)<sup>24</sup>

Air (for comparison to "normalcy")	343 m/s
Water	1,498 m/s
Iron	5,130 m/s
Earth's Crust	6,000 - 8,000 m/s <sup>25</sup>

<sup>24</sup> Google search

<sup>25</sup> The Earth's crust is highly heterogeneous of mineral solids, which have varying densities and conductivity.

Table 2 - Relative Abundance of elements in Solar System, atoms/  $10^6$  parts silicon<sup>26</sup>

Hydrogen	$2.79 \times 10^{10}$
Helium	$2.72 \times 10^9$
Oxygen	$2.38 \times 10^7$
Carbon	$1.01 \times 10^7$
Neon	$3.44 \times 10^6$
Nitrogen	$3.13 \times 10^6$
Magnesium	$1.074 \times 10^6$
Silicon	$1.00 \times 10^6$
Iron	$9.00 \times 10^5$
Sulfur	$5.15 \times 10^5$
Argon	$1.01 \times 10^5$
Aluminum	$8.49 \times 10^4$
Calcium	$6.11 \times 10^4$
Sodium	$5.74 \times 10^4$
Nickel	$4.93 \times 10^4$
Chromium	$1.35 \times 10^4$
Phosphorus	$1.04 \times 10^4$
Manganese	9550
Chlorine	5240
Potassium	3770
Titanium	2400

As anyone can see, Hydrogen is *extremely* abundant by several orders of magnitude over a likely padded iron. The Earth's crust also carries sound faster, yes, however the slowdown in the outer core is very significant. Iron is only slightly slower than the Earth's crust and is probably supported in the mantle (in part) due to magma convection. However, the inner core seems far more likely to reflect a liquid heavy water or liquid metallic hydrogen model than an iron core, from a macro-perspective.<sup>27</sup>

The main issue is that while air/gas **cannot possibly** be in the core, a thick, viscous, non-iron core can. Based on the relative abundance of hydrogen and oxygen, and upon the presence of water in the mantle<sup>28</sup> and on the surface of an EGE, it can be postulated within reason that the core is in fact a form of proto-water or heavy water.

<sup>26</sup> Note that Iron here is including cores of Earth, Mars, and Moon, and possibly other moons, *without core samples*. [http://www.knowledgedoor.com/2/elements\\_handbook/element\\_abundances\\_in\\_the\\_solar\\_system.html](http://www.knowledgedoor.com/2/elements_handbook/element_abundances_in_the_solar_system.html)

<sup>27</sup> Probably heavy water, as liquid metallic hydrogen is quite rare and difficult to make, and so far, unproven in the main.

<sup>28</sup> <https://www.livescience.com/46292-hidden-ocean-locked-in-earth-mantle.html>

## Expanding Earth

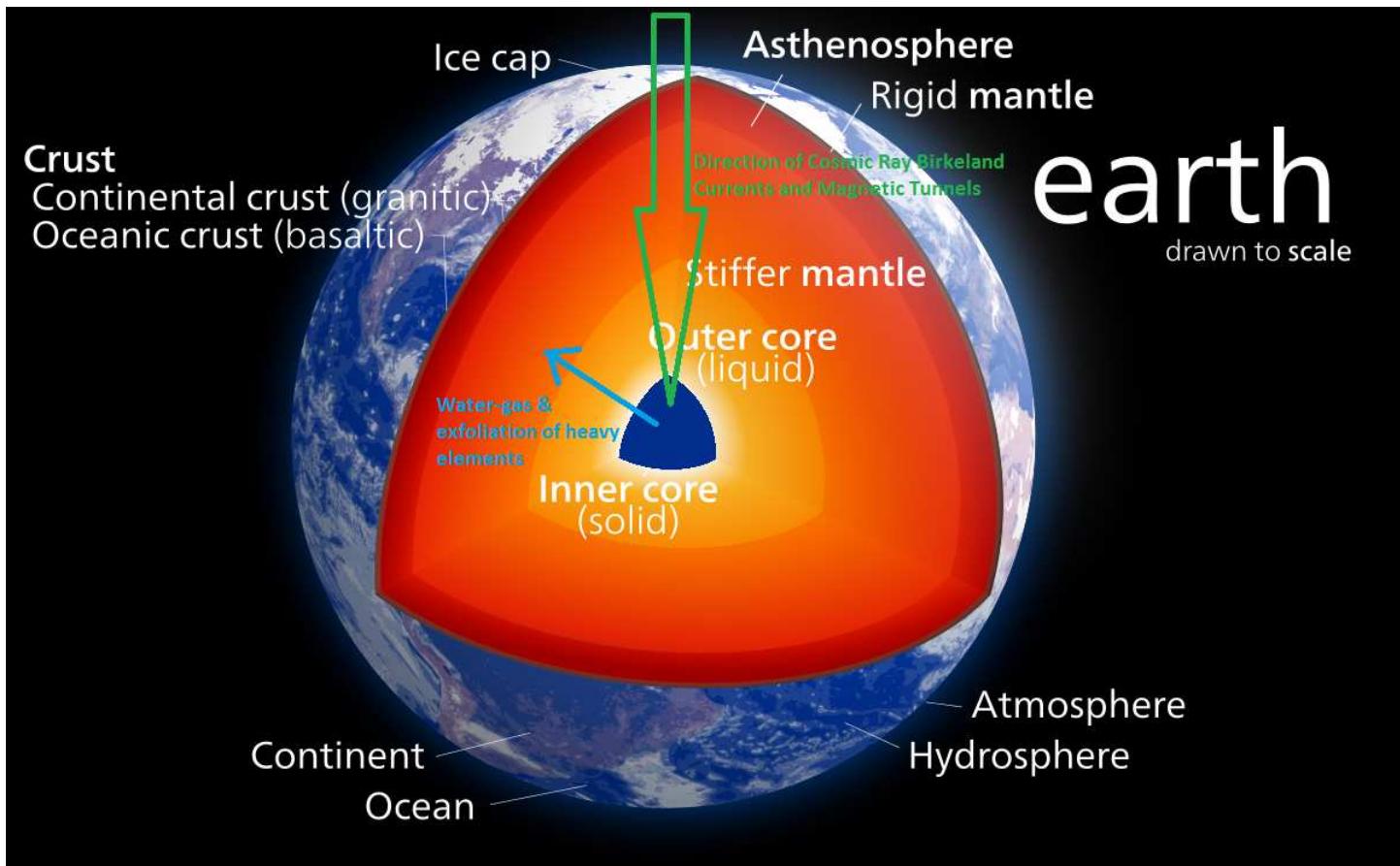


Figure 9 - Source of EGE

The evidence for an expanding Earth has been provided by the USGS,<sup>29</sup> though they purposefully ignore it as a form of error. Repetitious error. Despite the abundant evidence of expanding planets and gases in **everything else** in the Universe, from forms of life to stars to galaxies and even the postulated Expansion/Big Bang Universe itself, the USGS has decided that the Earth does not change size. Of course, this is already a falsified flaw in PT theory, as is discussed in “Unboxing Atlantis” [3].

This paper will not dwell on *if* the Earth is expanding, but why.<sup>30</sup>

The following figures all represent the most recent surveys of data from the two surveys cited, demonstrating how fast (shown by longer or shorter vectors) and which direction plates are moving now, as compared to past measurements (which are thought to be reliable enough indicators.) It might be that the plates are changing direction due to the shifting polarity of the magnetosphere,<sup>31</sup> however the moving poles<sup>32</sup>

<sup>29</sup> See “On the Origins of Religions,” [2], Part 2 - Analysis of the Model and Appendix A for citations

<sup>30</sup> Although the “cracks” of the planet *have been* construed as proof of the Enuma Elish/Tiamat myth, the fact remains that the rifts are spreading, and at rates faster than subduction zones. The crust is expanding so fast that the plates are “free floating” and changing directions.

<sup>31</sup> [www.magneticreversal.org](http://www.magneticreversal.org) B Davidson et al...

<sup>32</sup> <https://www.scientificamerican.com/article/are-theearths-magnetic-p/>

notwithstanding, there is not enough data to definitively prove the pole transition is occurring, let alone is the cause.<sup>33</sup> It may indeed be the opposite effect: changing electro-dynamic convection of magma may move the plates and their (and the mantle's) iron content could be altering the poles. Both might be the result of changes in the Solar System Circuit (SSC).<sup>34</sup>

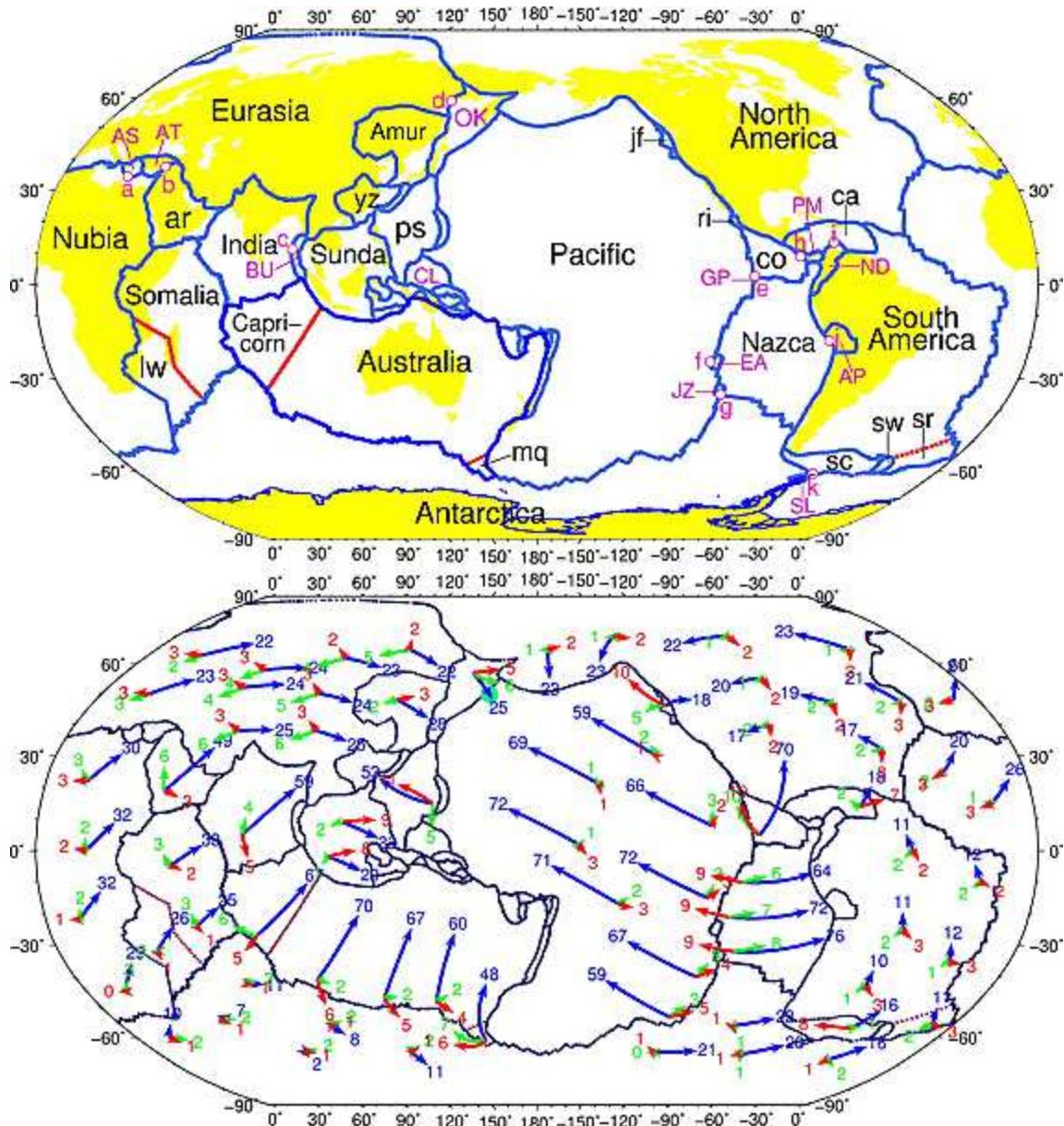


Figure 10 - 56 plates relative to the no-net-rotation reference frame<sup>35</sup>; credit: Argus et al...

<sup>33</sup> <http://www.pnas.org/content/early/2018/04/24/1722110115>

<sup>34</sup> As the Earth rights upwards, which is an ongoing event, and as it moves through the Precession of the Equinoxes, its relative capacitance-inductance (but not resistance, as far as we know) will change due to altered angular momentum of the AC motor-generator. However, the bigger effect here is the Grand Solar Minimum and the movement of our SSC out from behind a cloud of galactic gas and dust. For more information on these two phenomena, see "Where are We Going?" video series, by Ben Davidson of Suspicious Observers:

<https://sites.google.com/site/electricuniversegateaway/recent-news/wherearewesolarsystemgoing-bendavidson>

<sup>35</sup> (top) The 56 plates in NNR-MORVEL56, which consist of the 25 plates in MORVEL (black text) [DeMets et al., 2010] and 31 additional small plates from Bird [2003] (magenta text). Two-letter abbreviations (see Table 1) are lowercase for MORVEL plates and uppercase for the 31 plates from Bird [2003]. Plate boundaries are identical to those from Bird [2003] (in blue), except for (in red) the Lwandle-Somalia, Capricorn-Australia, Macquarie-Australia, and Sur-South America plate boundaries. MORVEL56 relative plate velocities at locations (a) through (k) are shown in Figure S1 of the auxiliary material. (bottom) The blue arrows and numerals show the NNR-MORVEL56 horizontal velocities and 95% confidence

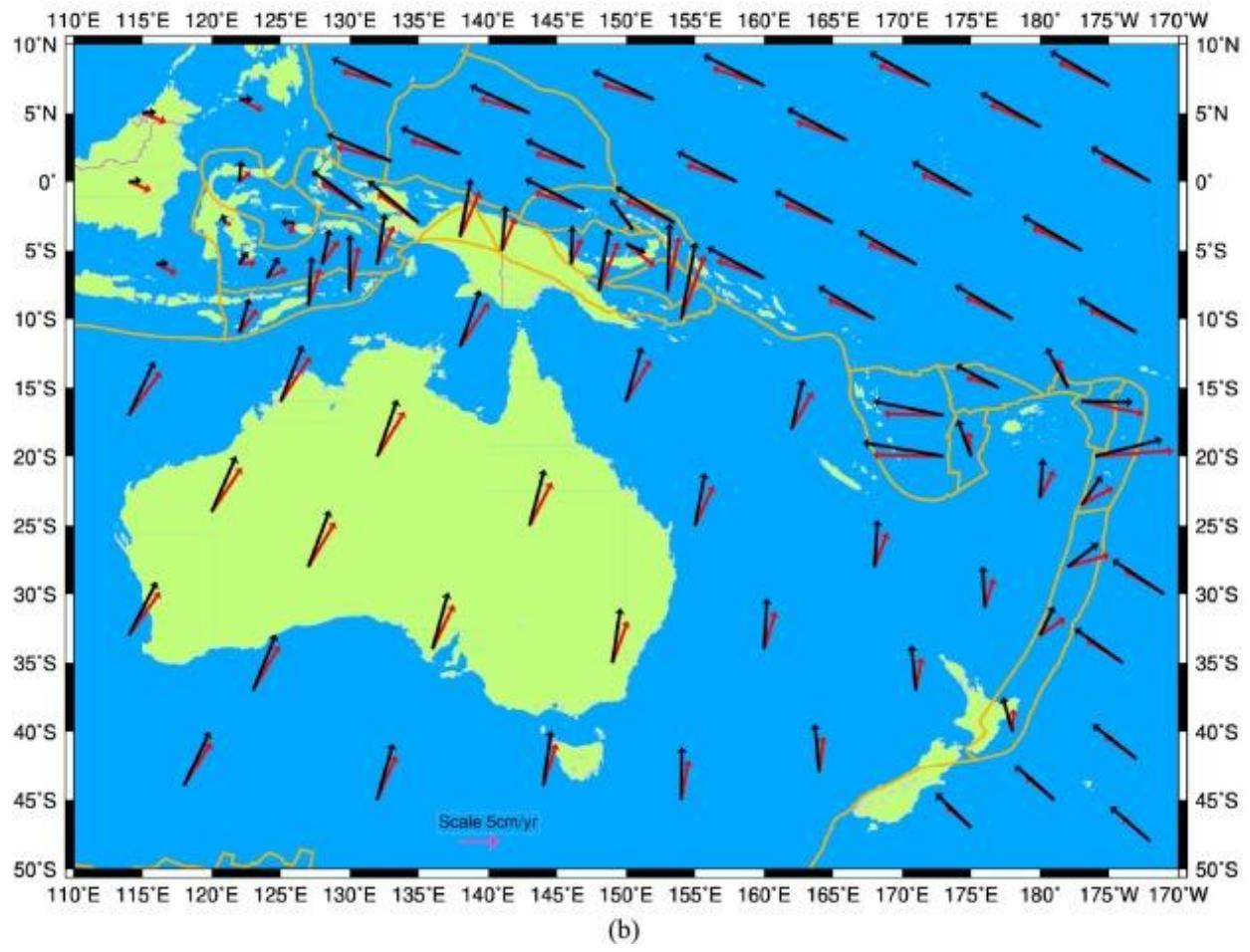
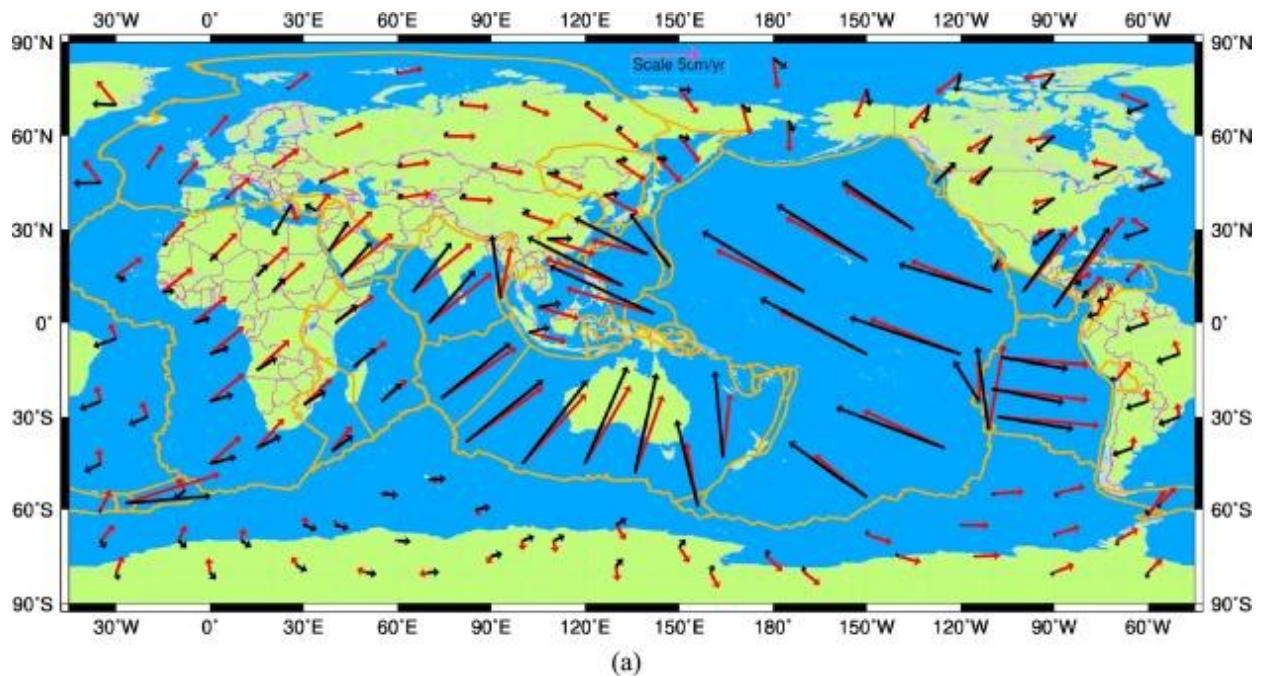


Figure 11 - Absolute plate motions relative to deep mantle plumes<sup>36</sup>; credit: Wang et al..

limits (light blue, imperceptible except for the Okhotsk plate). The red arrows and numerals show velocity differences between NNR-MORVEL56 and NNR-NUVEL1A. The green arrows and numerals show velocity differences between NNR-MORVEL56 and GSRM-NNR-2 [Kreemer et al., 2006]. Speeds are in mm a<sup>-1</sup>."

<https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2011GC003751>

<sup>36</sup> "Absolute plate velocities relative to deep mantle plumes estimated by T25M (black arrows) compared with NNR-MORVEL56 velocities (red arrows) (Argus et al., 2011). (a) Global map; (b) Regional map around Australia. (For

The main demonstration of these two studies is two-fold:

1. The magnitude of movement, assuming that plates are dragged along somewhat by spreading sea-floors and mantle plumes, is not uniform throughout the crust.
2. The spread rate not being uniform, indicates a **complex** mechanism whereby expansion and tectonics interact, creating both a pressure membrane<sup>37</sup> (created via voltage and edge currents<sup>38</sup> in the Earth Electric Circuit (EEC), and a tenuous form of equilibrium that is akin to hardened slag floating on top of molten steel in a foundry, moving according to roiling currents below it.)

Additionally, these studies have taught us that not only are landmass crustal collapses possible and a matter of historical and geological record (thus throwing the almost moronic *Pangea* hypothesis<sup>39</sup> directly out the window), but that our own place on this *membrane* is tentative, at best. This agrees with mytho-scriptural record and what we know of extinction level events<sup>40</sup>, and how they rhythmically threaten the survival of species throughout time.<sup>41</sup>

## Growing (Gaia) Earth

The main issue with the EE or HEE, however, is that it fails to conform fully to axiom 3 of the Laws of Life (Appendix B). Moreover, although life cycles have been ascribed (incorrectly) to stars<sup>42</sup> and (correctly) to quasars becoming dwarf and then full galaxies<sup>43</sup> Expanding and Static Earth theorists alike have been guilty of violating the *Axiom of Becoming*. This is a larger problem of a misappropriate understanding of both Entropy and the Law of Conservation of Mass-Energy (first law of thermodynamics). Let us summarize the issue forthwith:

- The Electromagnetic Sun, either via fusion or exfoliation, but definitely via an Electric Field accelerates heavy elements and radiation (light, quarks, neutrinos, etc...) outwards, the so-called "Solar Wind."<sup>44</sup>
- The Planets are bathed in energy-mass
- The planets with magnetospheres, such as Earth, Venus, Jupiter, Saturn, Uranus, and Neptune, and presumably some of the moons, direct these particles into the poles in abundance, while reflecting the rest around their equators.
- This amounts to a huge mass of material arriving at the poles, and at the upper atmospheric boundaries (see Star-Water below), every second of every day of every year, even during Grand Solar Minimum.
- This energy-mass has to either accumulate at the surface, or in the interior.
- The Earth's core appears to be hot (based on magma convection).

---

interpretation of the colors in the figure(s), the reader is referred to the web version of this article.)"

<https://www.sciencedirect.com/science/article/pii/S0012821X18301432>

<sup>37</sup> The Earth's crust is inexplicably thin, and has a non-smooth gradient change from solid to gas, without sublimation at the ground level. Though it may seem normal to us, in a chemical flask this would be considered remarkable. Given that the soil is not gas-phobic and is utterly infused with nitrogen and carbon, it seems that there must be a macro-level dynamic at work, which houses discordant levels of chemical reactions, especially organic chemistry (ie - life).

<sup>38</sup> "Inductance Modeling using New Electromagnetism," R. Distinti, 2007

<sup>39</sup> Pangea theory is only wrong because insufficient science was performed early on at its inception (1912) to find the plate boundaries which also matched in Asia and the Americas. <https://www.britannica.com/place/Pangea>

<sup>40</sup> <http://seas.umich.edu/~dallan/nre220/outline3.htm>

<sup>41</sup> <https://en.wikipedia.org/wiki/Extinction>

<sup>42</sup> <https://www.schoolsobservatory.org/learn/astro/stars/cycle> - although incorrect, it is at least conforming to Axiom 3 See Figure ^ for corrected Luminosity vs Temperature map; further discussion is found in "Electric Sky," D Scott

<sup>43</sup> [https://www.haltonarp.com/articles.origins\\_of\\_quasars\\_and\\_galaxy\\_clusters](https://www.haltonarp.com/articles.origins_of_quasars_and_galaxy_clusters)

<sup>44</sup> So far all the main elements have been found in our 'main sequence star's "wind" despite the star being almost entirely hydrogen.

- The source of this heat might be thermodynamic pressure, however it would be postulated that the Earth would grow colder over time, and more dormant (such as the moon or Mars), whereas instead it oscillates instead.<sup>45</sup>

The result of this is that indeed one must account for not mere expansion, but **growth** (see Tomato on a vine analogy). Perhaps the end result of this electric circuit system is that the planet becomes like Neptune or Uranus,<sup>46</sup> which then become bigger and bigger gas giants, and finally these become brown dwarf stars themselves. It is not known at this time.

What is known is that the Law of Evolution (or Flux), has certain axioms within it. Thus far, our macro-analysis of this (known as the Gaia Hypothesis<sup>47</sup>) states that life follows macro-level self-emergent properties - that is, fractal replication. While the Axiom of Becoming dictates that *if one is not growing, one is dying*, the evolutionary pathway allows for transformation. What this all means is not yet known, however, Darwinian competition as the *only* mechanism for growth and enhancement/adaptation has long been abandoned in the field of biology.<sup>48</sup> Nevertheless, it forms a nucleus of the understanding, but that core has been augmented by new data, computer work, broader exploration, and nearly two centuries of analysis.

Similarly, evolution for celestial bodies is only at the infancy of understanding. Our grasp of the life cycles of comets<sup>49</sup> has proven very challenging (to say the least) for NASA/ESA scientists.<sup>50</sup> How much more so would be data on a moon, planet, or star scale? The fact has emerged that stars can be small<sup>51</sup>, cold<sup>52</sup>, have very large gas giants surrounding them well within the so-called “habitable zone”<sup>53</sup>, and yet others can reach massive charge levels of enormous voltage potential<sup>54</sup> and current strength.

What this all means for the Growing Earth, is not yet decipherable beyond the mere **fact** of growth in a charge dense, energy-mass rich environment. As the Earth appears to have grown under the influence of a brown dwarf binary before, and does also now, does this mean the growth decelerates, or does it accelerate due to direct exposure to the solar rays? Solar Flares and CMEs might provide *more* mass ejecta exposure,<sup>55</sup> not less, without magnetosphere protection of a Jovian or Saturnian host. Yet, our place might be more secure overall, considering collisions. But, our exposure may increase as well now that we are exiting the dust blanket that shielded the SSC from the Milky Way core, where AGN are known to act as “giant coaxial cables” of charge.<sup>56</sup> There has even been direct measurement of the AGN, SGR A\* and it has yielded preposterous current densities.<sup>57</sup>

---

<sup>45</sup> <http://joannenova.com.au/2010/02/the-big-picture-65-million-years-of-temperature-swings/>

<sup>46</sup> These gas giants are likely to contain their own rocky cores. <https://arxiv.org/pdf/1805.01478.pdf>

<sup>47</sup> <https://courses.seas.harvard.edu/climate/eli/Courses/EPS281r/Sources/Gaia/Gaia-hypothesis-wikipedia.pdf>

<sup>48</sup> <https://futurism.com/beyond-darwin-scientists-may-be-redefining-evolution/>

<sup>49</sup> <http://sci.esa.int/rosetta/59177-rosetta-finds-comet-connection-to-earth-s-atmosphere/>

<sup>50</sup> <http://thunderbolts.info/forum/phpBB3/viewtopic.php?f=3&t=15322&sid=98cc3911ef20b475d801d314754be757>

<sup>51</sup> <https://www.zmescience.com/science/news-science/smallest-star-ever231231/>

<sup>52</sup> <https://www.space.com/12714-coldest-failed-stars-brown-dwarfs-wise.html>

<sup>53</sup> <https://www.nasa.gov/feature/jpl/new-clues-to-trappist-1-planet-compositions-atmospheres>

<sup>54</sup> <https://www.newscientist.com/article/dn8576-fast-spinning-neutron-star-smashes-speed-limit/>

<sup>55</sup> <http://adsabs.harvard.edu/full/1992ApJ...390L..37G>

<sup>56</sup> <https://arxiv.org/pdf/1712.08414.pdf>

<sup>57</sup> Not a black hole but a charge dense “center of mass” <http://iopscience.iop.org/article/10.1088/2041-8205/741/1/L15/pdf>

## Electromagnetic (Transformer) Earth

The Earth as a stellar transformer is proposed by Leybourn<sup>58</sup>, Thornhill<sup>59</sup>, et al... and follows as a natural course of the Electrica Solar (Jeurgens<sup>60</sup>-Scott<sup>61</sup>) model. The following figures will elucidate the many Electric Sun, Earth, and transformer models:

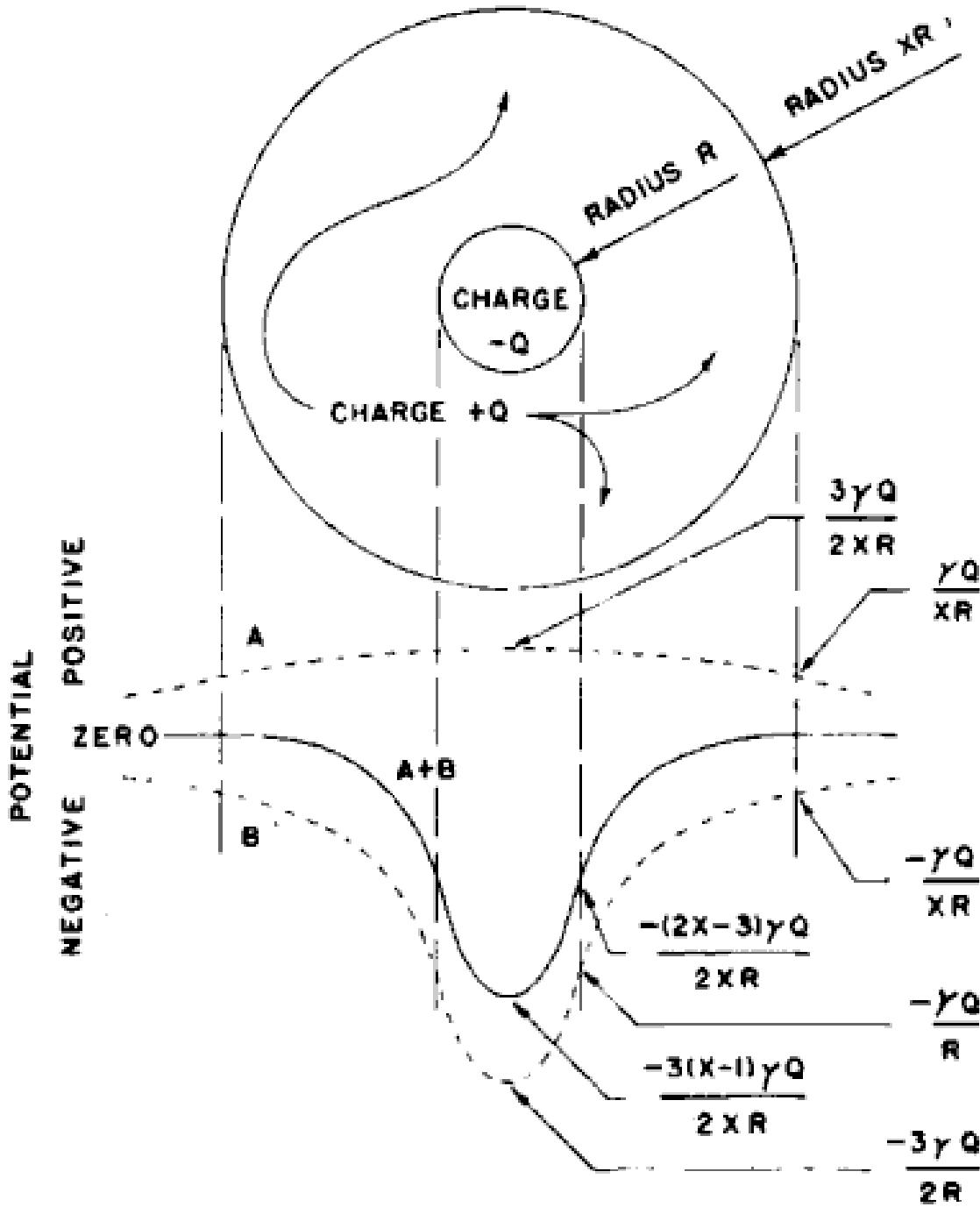


Figure 12 - Electric Sun model, credit: Juergens, kronos-press.com<sup>62</sup>

<sup>58</sup> [https://www.youtube.com/watch?v=QiM\\_gLRiuGc](https://www.youtube.com/watch?v=QiM_gLRiuGc)

<sup>59</sup> <https://www.everythingelectric.com/electric-sun/>

<sup>60</sup> <https://www.everythingelectric.com/ralph-juergens/>

<sup>61</sup> <http://electric-cosmos.org/sun.htm>

<sup>62</sup> "Electric Discharge as the source of Solar Radiant Energy," Juergens, 1982

<https://www.kronos-press.com/juergens/k0802-electric-ii.htm>

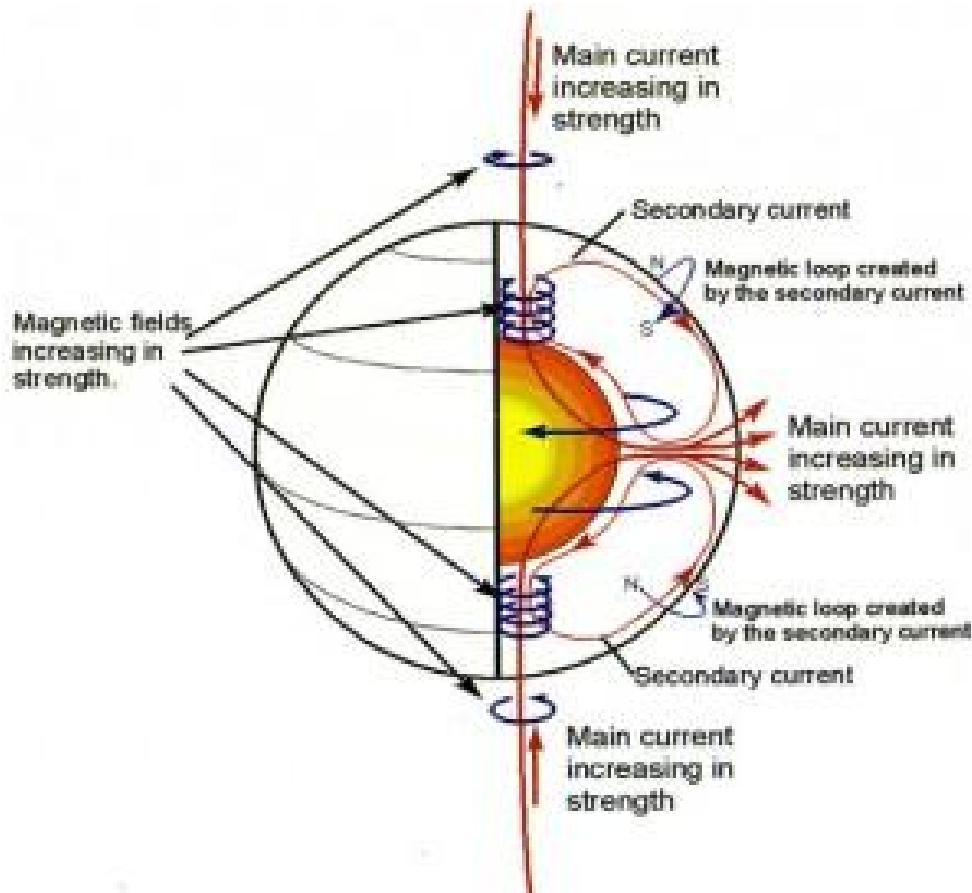


Figure 13 - Electric Sun, credit: D. Scott, electric-cosmos.org

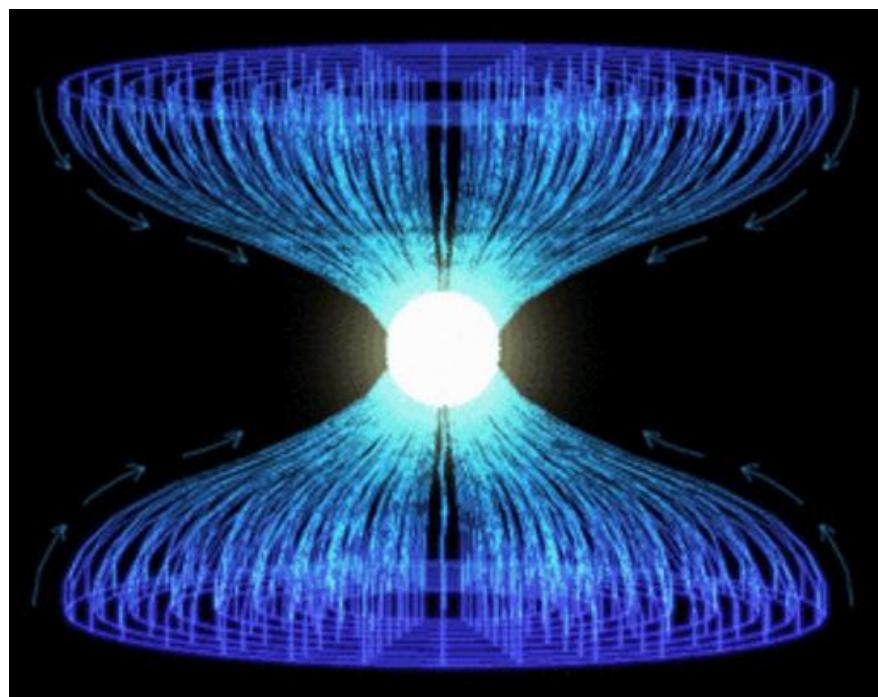


Figure 14 - Bennett Pinch (Z-Pinch) formation of a Star, note the concentric circles<sup>63</sup>

Note that the Electric Star theory<sup>64</sup> in general relies upon Marklund convection:

<sup>63</sup> A major discussion of these is contained in the author's paper, "On the Origins of Religions," [1]; as well as in Project SAFIRE's phase 1 paper, also cited in that discussion. See [1]: Appendix A&B for citations and visual study.

<sup>64</sup> <http://www.holoscience.com/wp/our-misunderstood-sun/>

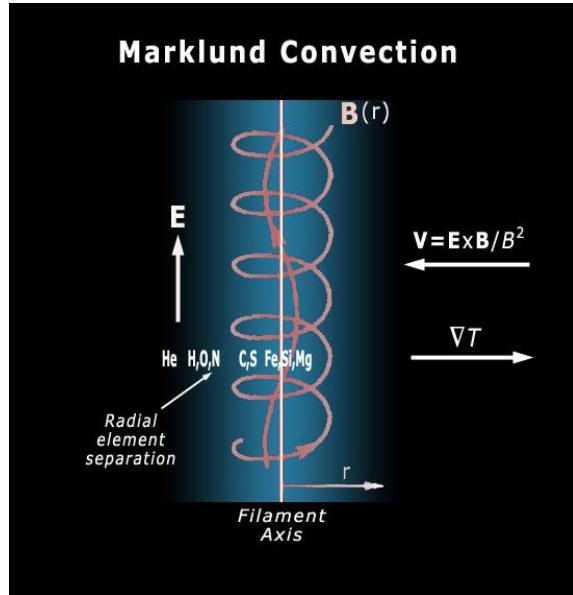


Figure 15 - Marklund Convection<sup>65</sup>

The following graphs demonstrate the plasma-electric function of voltage on the sun:

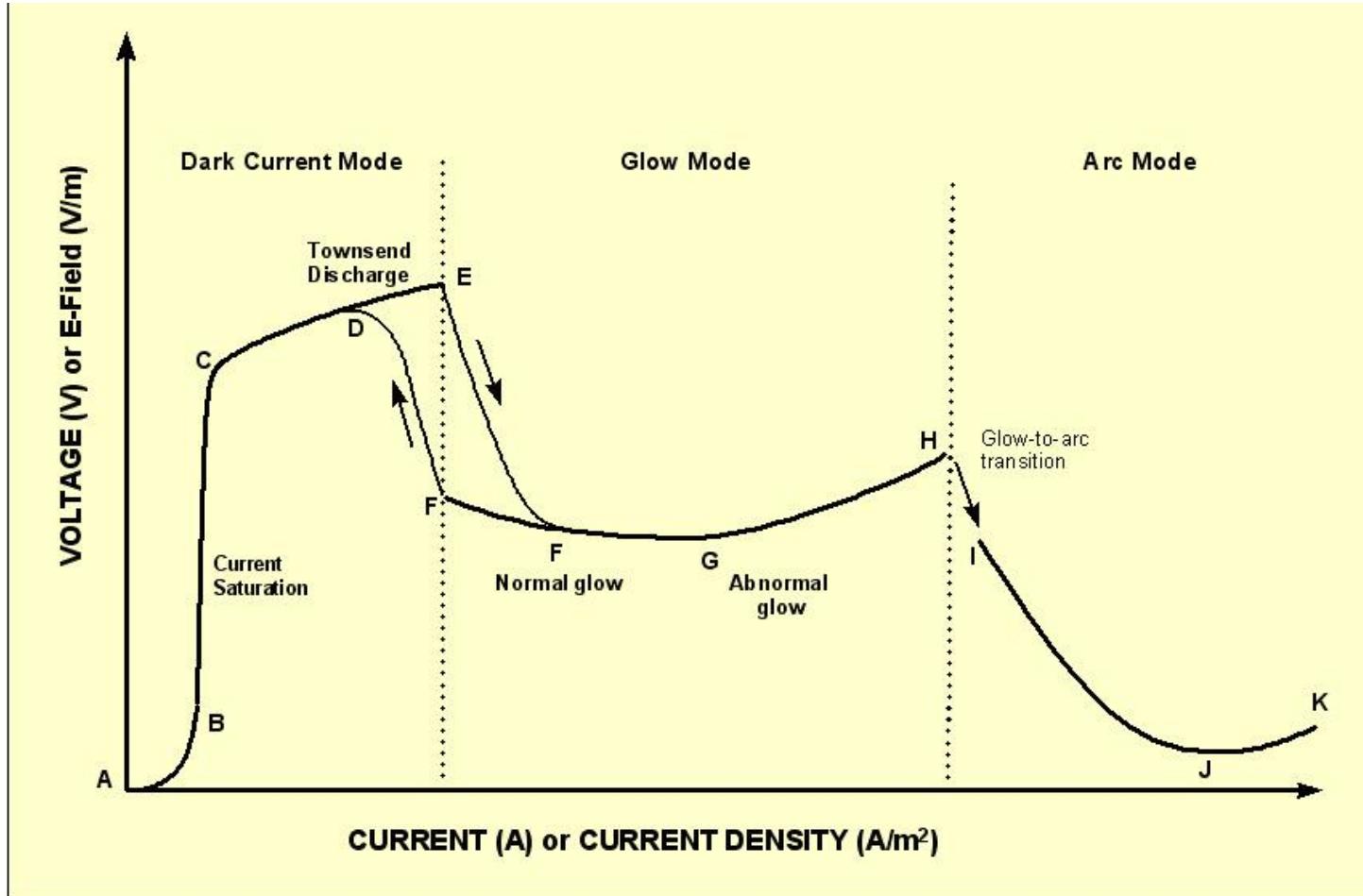


Figure 16 - Voltage vs. Current for plasma modes, replicate what the Sun shows.<sup>66</sup>

<sup>65</sup> <https://sites.google.com/site/electricuniversegateway/recent-news/marklundconvectionandz-pinchesexplained>

<sup>66</sup> Credit for both: everythingselectric.com

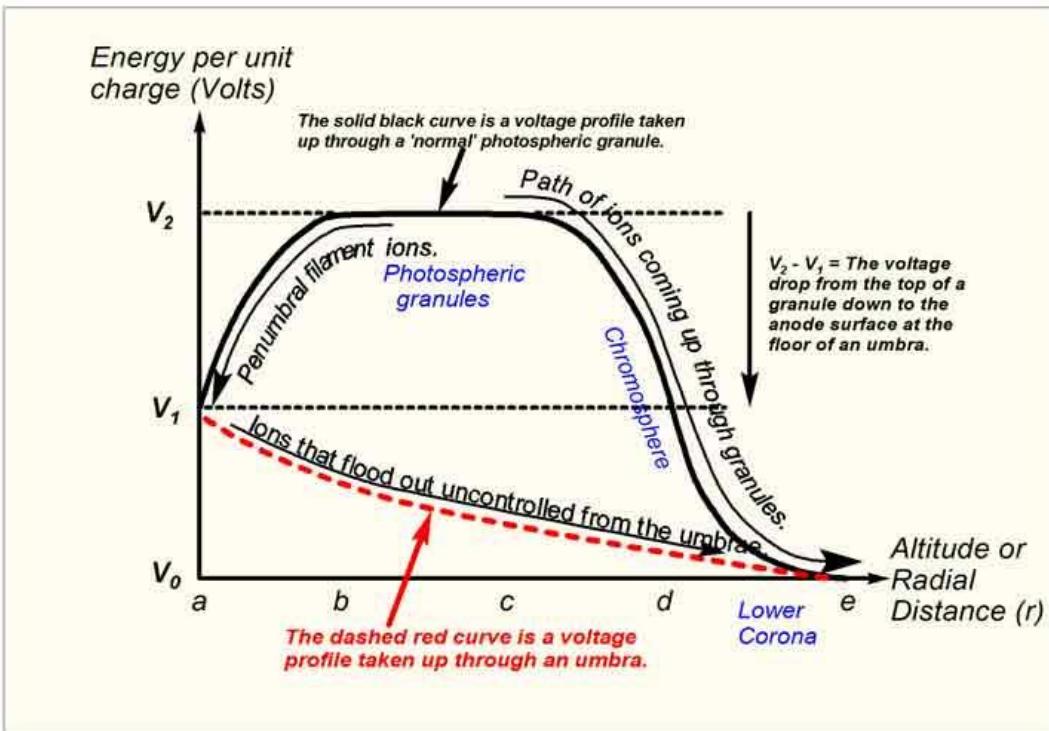


Figure 17 - Voltage vs. distance from surface of the sun; credit: everythingselectric.com

The implication of these models (and the Alfvén model discussed below) will be discussed in more detail in the next section. However, the premise here is simple:

Energy in = Energy out. (Appendix B.II, Laws of Thermodynamics)

Although some energy is lost via thermal radiation from the Earth, the majority of the transformation of the energy-mass of the “solar wind” entering must be accounted for. A proposed mechanism is as follows:

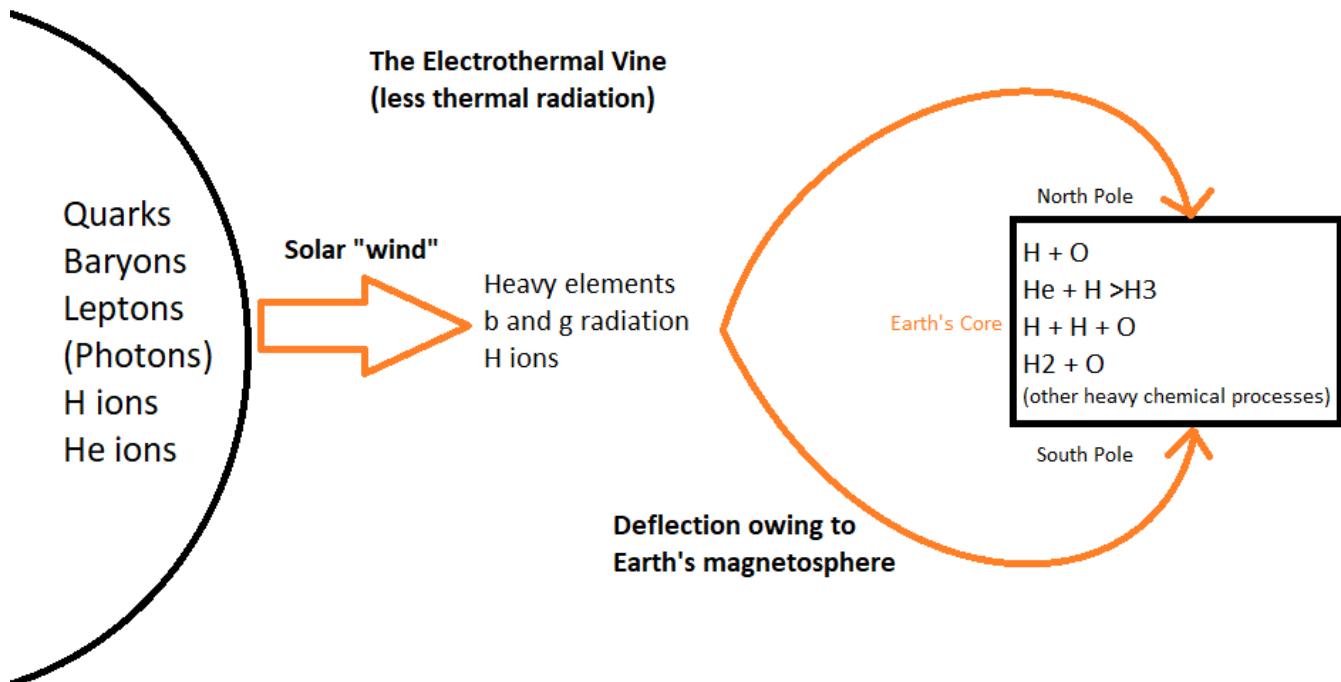
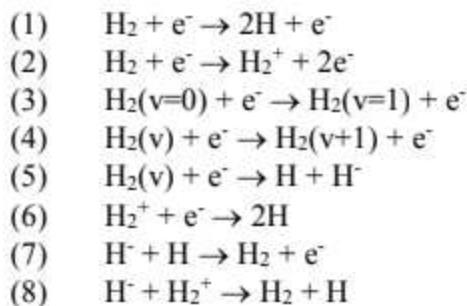


Figure 18 - The Electrothermal Vine; credit: Careaga

The author would like to take the time to point out that all of these hypotheses were proposed long before, in some cases nearly 100 years or more before the current “electrification” being undergone by NASA/ESA at the moment.

The exact mechanisms inside of the core are not known or easily proposed. More data is needed. It is of interest to note, however, that in SAFIRE phase 1<sup>67</sup>, various processes for creation of helium from the sun’s surface were proposed, and even with a small anode of relatively low energy, there were signs of fusion occurring. This is due to the high pressure contained in plasma arc mode “tufting” interactions.

We will use here a very simplified model of hydrogen plasma chemistry to illustrate some points. For our purpose we simplify the chemistry to the following reactions:



The electron collision cross sections for processes (1) – (5) are well known. We have used a very complete set of electron-H<sub>2</sub> and H collision cross sections [14-16] in our code [17] for solving Boltzmann’s equation for the energy distribution of electrons  $f_e(\varepsilon)$  in a weakly ionized gas. The most important parameters are, of course, the similarity parameter E/N and the gas density N (cm<sup>-3</sup>). E/N has units of V-cm<sup>2</sup> although the units commonly used are Townsends (Td) where 1 Td = 10<sup>-17</sup> V-cm<sup>2</sup>.

Although H<sub>3</sub><sup>+</sup> is likely the dominant positive ion due to the reaction  $H_2^+ + H_2 \rightarrow H_3^+ + H$ , we have called all the positive ions H<sub>2</sub><sup>+</sup> because the dissociative recombination coefficients of the two ions are about the same [18]. The rate coefficients for the important reactions (7) and (8) are well known and can be found in Ref. [19].

Figure 19 - Hydrogen plasma chemistry, credit: Morgan and Childs, Project SAFIRE

What the author proposes then is not a final solution of the answer to *why* the Earth grows, and thereby expands and shifts, buckles and collapses (on the crust), but a proposition for more clarification of *how* these complex chemistries may interact inside of solid and liquid environments. The vast majority of experiments on plasma arc discharge have naturally centered upon *ionized gas* which is what it was first proposed to be. However, lightning inside of the Earth, and electric current, clearly needs more explanation and exploration.<sup>68</sup>

It may be, in the end analysis the solution to not only past secrets, but also a key to future ‘harvesting’ of the Solar Wind, as there appears to be similar complex chemistry happening in comet surfaces and ‘atmospheres’ which have specs of water, but not [ice] lakes of it,<sup>69</sup> suggesting formation *in situ*.

<sup>67</sup> “Study of striations in a spherically symmetric Hydrogen discharge”, Morgan and Childs, 2015, [https://drive.google.com/file/d/0ByRZ\\_FN\\_vit\\_VT15Uzg2cFVGSwM/view](https://drive.google.com/file/d/0ByRZ_FN_vit_VT15Uzg2cFVGSwM/view)

<sup>68</sup> Especially with evidence emerging of “instant petrification”, see: P Mupp, “Ancient Destructions”

<sup>69</sup> [https://youtu.be/HnwqU002w\\_A](https://youtu.be/HnwqU002w_A)

# The Plasma Electromagnetic Sky Theory (PEMS)

In this section, a more detailed idea of PEMS will be laid out. In the next section, details about plasmas, plasmoids, planets, and other notable features will be able to add layers to the PEMS theory. Finally, proposed final discussions of the “shells” or “spheres” of Earth and Heaven will be provided.

In this prelude, there are two main points the author wishes to make:

1. The Electric Star Model reorganizes the stars in such a way to perfectly predict the voltage and current related environment in which gas giants and stars behave, given that the fusion model fails to make these predictions accurately and continually is undermined (in terms of size), and overdone (in terms of creating and failing at the upper limits of fusion model).
2. The Membrane and Electrothermal Vine<sup>70</sup> aspects of PEMS are part of a larger view of charge distribution, voltage potential (tension), current and induction, and magnetic ‘flux’ modulation<sup>71</sup> that is occurring in the SSC and GEC.<sup>72 73</sup>

The view, as a whole, involves seeing space as filled, almost completely, with: a) matter (mostly hydrogen plasma), b) force and non-force fields, c) energy-mass redistribution currents, primarily electric and magnetic, but also EMF in the form of various forms of spectral light, and momentum exchanges, and d) charge distribution, including separation, accumulations, and vortices.

The sought after “Aether” is merely the Axiom of Becoming in action of moving energy from place to place, changing its nature. It may be that a mechanism for the rotation of the Changes needs be sought,<sup>74</sup> however that would be beyond the scope of this paper.

---

<sup>70</sup> For discussion of literal *growth* involving electricity, see “Plant electrotropism”, A Ramthun, <https://youtu.be/-MumeA4q-5Q>

<sup>71</sup> Flux here denotes the “flow” of something, however magnetic fields do not flow as electricity does. Further discussion will be found in the author’s paper, “The Magnetic Universe”. Modulation here denotes a form of buffering or “locking in” of objects, such as metal fillings, along what appear to be ‘field lines’ and between them, creating areas of denser or less-dense magnetic ‘flux’. The issues surrounding magnetic terminology are renowned, and obviously problematic. Such terms as “reconnection” and “frozen-in” have led to general misunderstandings of the concepts of electricity and magnetism alike. [http://www.thunderbolts.info/thunderblogs/archives/descott08/021608\\_reinventing\\_the\\_wheel.htm](http://www.thunderbolts.info/thunderblogs/archives/descott08/021608_reinventing_the_wheel.htm)

<sup>72</sup> Solar System Circuit and Galactic Electric Circuit, respectively. In truth this extends upwards to the galactic superstructures, such as Lanakeia, but that will be the topic for another paper.

<sup>73</sup> [https://youtu.be/M2\\_H58oGHS0](https://youtu.be/M2_H58oGHS0)

<sup>74</sup> To date there is almost no funding for determining the mechanism of the Yi (Changes), and the I Ching remains the only comprehensive public work on this subject. Yet, the effects of the Yi upon the success or failure of almost everything go unremarked upon.

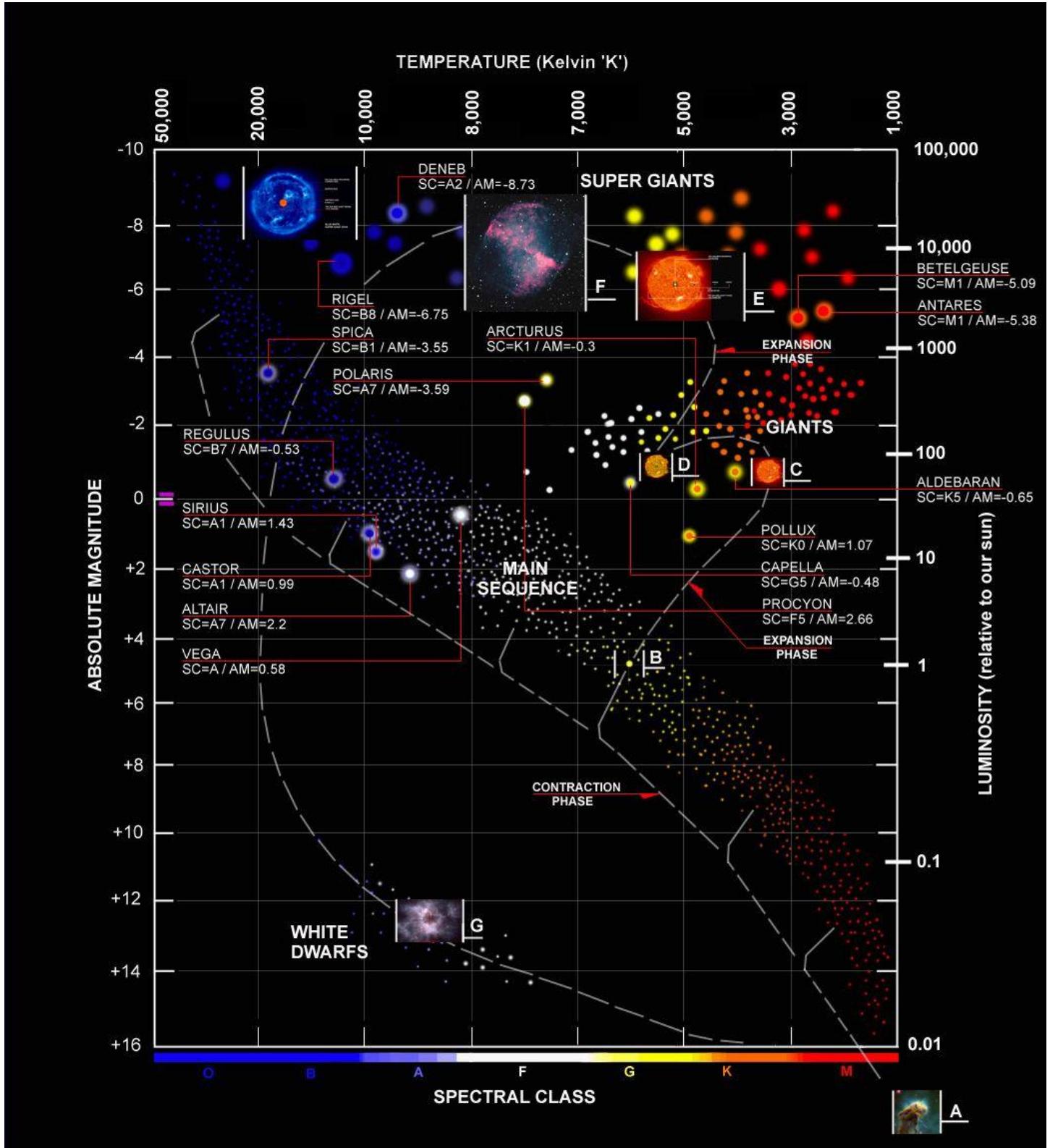


Figure 20 - Typical Hertzsprung-Russell diagram<sup>75</sup>, credit: Urania

<sup>75</sup> No discernable pattern emerges that guides the fusion model into simplicity. A great deal of quantity (by count) and of mass is contained in non-MS stars. To say nothing of “Hot Jupiters” and black body exoplanets.

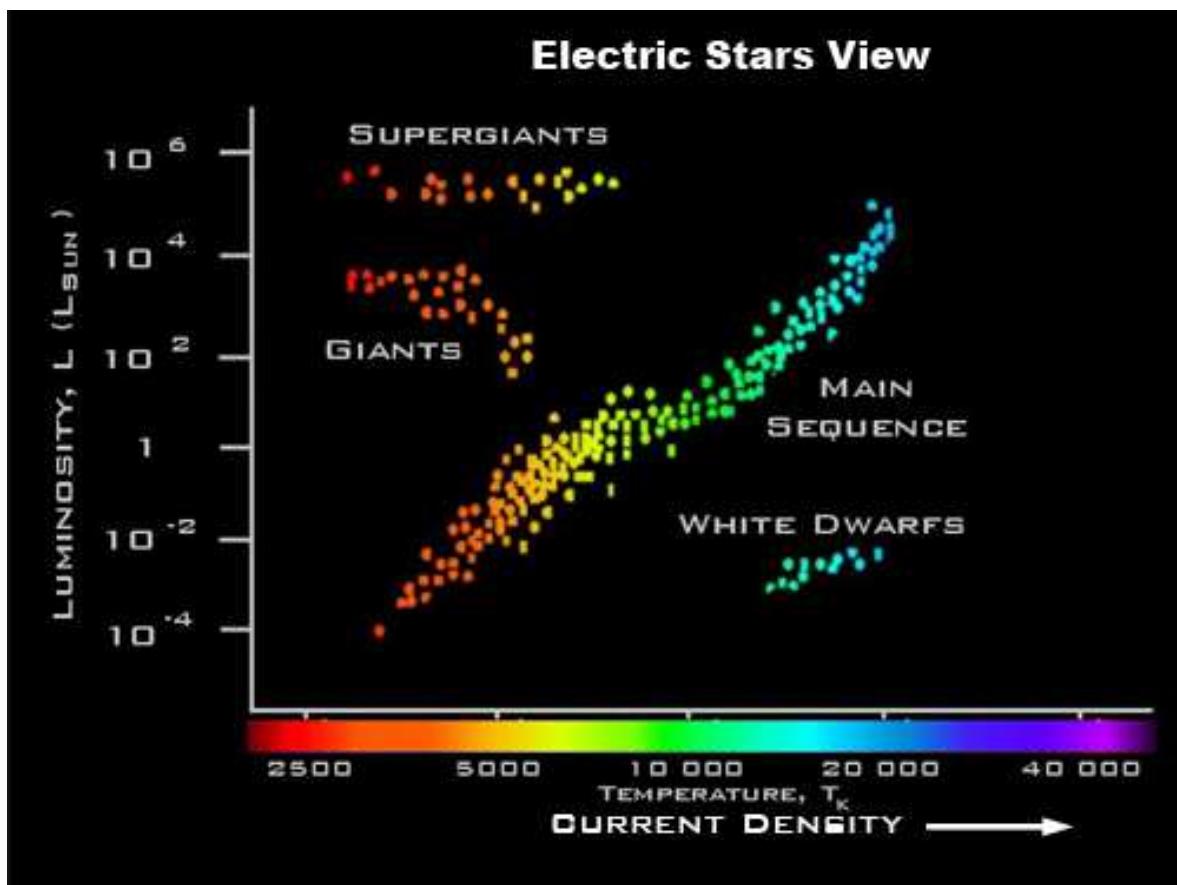


Figure 21 - Corrected HR diagram shows why luminosity increases<sup>76</sup> credit: D Scott

## The Purple Sky Hypothesis and Zep Tepi

Though this paper is not about mythology, it is worth noting that humanity has two means of record of the time (called Zep Tepi) when the sky was a different color, and one major ‘smoking gun’ of evidence in biology now:

1. Myths around the world, from Egypt to South America to the aborigines of Australia all report a time when there was a “Purple” Sky (probably indigo), and that the “sky fell.” Even in the Sumero-Babylonian myths there are references to this event and the “separation of Heaven and Earth” (Heaven being the dwarf-star proto-Saturn<sup>77</sup>)
2. A sizeable majority of cultures of the Earth do not have separate words for blue and green. Red-Green colorblindness is most probably a mutagenic adaptation or a remnant feature of a lack of need for such differentiation.
3. To this day, plants prefer red or blue light for growing, but not green.<sup>78</sup> Yet the sun (Sol) releases primarily green light in the main.<sup>79</sup> It only appears white to us because of its intense luminosity.<sup>80</sup>

The resultant of this analysis is that the Earth used to exist (and was perhaps birthed within) Saturn’s plasma double layer sheath. That is to say, its coronal aurora. At such a time mankind would not have been

<sup>76</sup> This points to so-called outliers as cases of unique behaviors as according to current densities.

<sup>77</sup> [https://www.youtube.com/watch?v=Kff\\_ytg0-8w](https://www.youtube.com/watch?v=Kff_ytg0-8w)

<sup>78</sup> <https://www.gardeningknowhow.com/garden-how-to/design/lighting/red-light-vs-blue-light.htm>

<sup>79</sup> <https://physics.stackexchange.com/questions/171595/why-doesnt-the-sun-appear-green-to-our-eyes>

<sup>80</sup> <https://physics.stackexchange.com/questions/354749/why-does-the-sun-appear-yellow>

able to see moons outside the aurora, and those within would have been regarded as part and parcel of the “One God”.<sup>81</sup> This is precisely what Egyptian, Chinese, Sumerian, Hindu and American myths recount.<sup>82</sup>

## Jeurgens Model

The case made by Ralph Juergens in the 1960s and 1970s for an Electric Sun was very convincing and nearly complete. It however did lack some of the features added to it below by Donald Scott, and from Alfvénic magnetic hydrodynamics which were confirmed in the 2000s. The main features of the Juergens model<sup>83</sup> are as follows:

1. Cathode drop explained by a  $10^{10}$  voltage drop across the poles of the sun.
2. Electrons in solar “wind” leaving the sun with about  $10^{10}$  eV of power.
3. Explanation for the solar wind via an Electric field accelerating the particles away from the surface.<sup>84</sup>
4. Explanation of the massive increase in corona temperature as compared to the solar surface.<sup>85</sup>
5. A prediction of current at around  $2 \times 10^{-10}$  A/m<sup>2</sup>; the actual value is one order of magnitude below this.
6. A prediction that the voltage potential would be approximately the same throughout the solar sheath for several light years (putting it in contact with the sheath of Polaris at least).
7. An electron “re-capturing” sphere of approximately  $10^{27}$  square meters in size, extending past Pluto to  $10^{13}$  meters (Pluto is  $6 \times 10^{12}$  m away from the sun).
8. A prediction that the Earth is receiving a current of  $4 \times 10^{16}$  A with a density of  $1.4 \times 10^{-7}$  A/m<sup>2</sup>.

Regarding “how will it be powered...” The model stipulates that a positive spherical shell outside the stellar limit will exist within the galactic interstellar space, and this will provide enough negative space to create a potential drop that essentially recirculates the electrons backwards to the star.

The negatives to this model are that it does not postulate a direct connection to the GES<sup>86</sup>, which has since been shown to exist. The power of Birkeland currents is so much beyond what even Birkeland would have predicted himself, that no one practically would have predicted that not only would stars be lined up along pearls on a string<sup>87</sup> (as predicted in Marklund convection models), but that entire galaxies are lining up.<sup>88</sup> The fabric is so interwoven as to predict not only the rotation of galaxies<sup>89</sup> (without dark matter being invoked), but of multiple galaxies and clusters and nebulae in co-rotation.<sup>90 91</sup>

<sup>81</sup> “The Saturn Myth,” D Talbott, 1980

<sup>82</sup> The diffusion aspect of EPEMC and Atlantis notwithstanding, the author maintains that although pre-Columbian contact from Old World to New did occur, it did not lead to a global religion. Only the heavens in the form of stars, constellations, and planets could have done so.

<sup>83</sup> <https://www.kronos-press.com/juergens/1982-electric-solar-energy-juergens.pdf>

<sup>84</sup> A phenomenon not explained by either fusion or LMH exfoliation alone, as it would violate thermodynamics.

<sup>85</sup> Robitaille et al.. contend that the corona is not this temperature at all but it is an *apparent* temperature, and only a measure of potential energy. The author somewhat agrees.

<sup>86</sup> <http://iopscience.iop.org/article/10.1088/2041-8205/788/1/L19/pdf>

<sup>87</sup> [https://www.esa.int/Our\\_Activities/Space\\_Science/Herschel/Herschel\\_views\\_deep-space\\_pearls\\_on\\_a\\_cosmic\\_string](https://www.esa.int/Our_Activities/Space_Science/Herschel/Herschel_views_deep-space_pearls_on_a_cosmic_string)

<sup>88</sup> <https://www.newscientist.com/article/dn26598-galaxies-in-filaments-spaced-like-pearls-on-a-necklace/>

<sup>89</sup> Since 1956 when Terrella experiments showed the shapes of galaxies and their rotations. Simulations by Dr. Peratt confirmed these rotations in lab and on computer. <https://www.plasma-universe.com/Terrella>

<sup>90</sup> <https://arxiv.org/abs/1301.0446>

<sup>91</sup> <https://arxiv.org/pdf/1801.09304.pdf>

## Scott Model

Improvements are made to this by the Scott model<sup>92</sup> shown in Figure 13. It is also rigorously developed in his accompanying paper, which shows the following intriguing result:

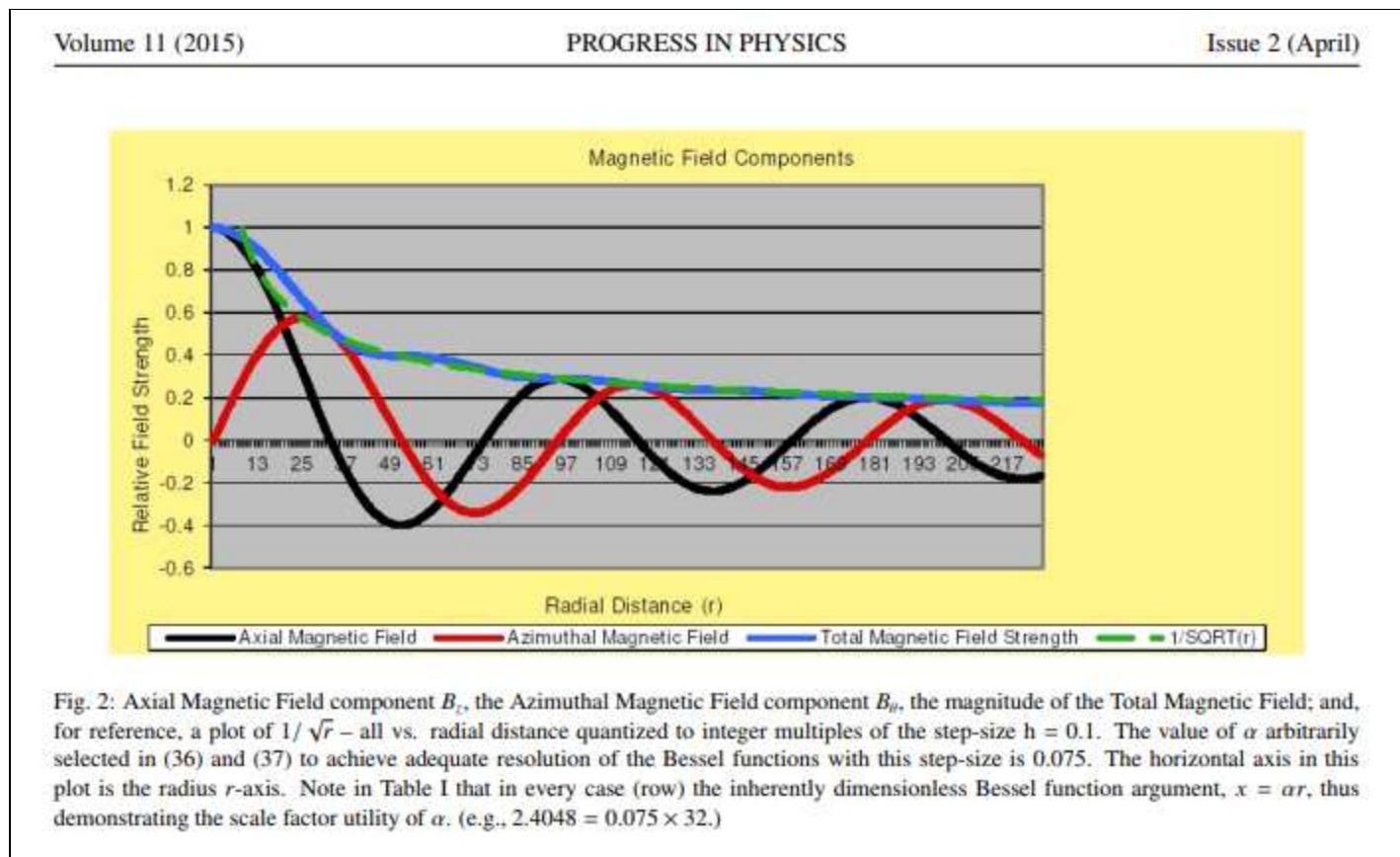


Figure 22 - Birkeland Current degradation as a function of distance; D Scott, Progress in Physics, 2015<sup>93</sup>

This is phenomenal information in three ways:

1. It provides a macro-solution to the issue of counter-rotation in AGN “jets”, “black holes”, the poles of gas giants Jupiter and Saturn, in the Earth’s Coriolis effect, and more.
2. It yields a method by which current may be carried vast distances, (once transformed), without dissipating quickly.<sup>94</sup> (see Figure 23)
3. It can provide a means for us to harvest the solar wind, in time, for human use. By calculating the expected voltage drops across various SCC components, we can map projections of current distribution and redistribution. Naturally this will require advanced algebra<sup>95</sup> and calculus run on supercomputers, probably quantum and fibre optic computers. But it will be possible with our physical maps.

<sup>92</sup> One of the more interesting aspects of the Scott model is his treatment of the sun as a transistor, explaining therefore the behavior of the Solar wind disappearing in 1999 for 2 days.

<https://sites.google.com/site/electricuniversegateway/recent-news/transistormodelofthesunssurface-donscott>

<sup>93</sup> <http://www.ptep-online.com/2015/PP-41-13.PDE>

<sup>94</sup> At 50x the distance, BC’s are 707.1% more efficient than typical signals.

<sup>95</sup> Perhaps R. Distinti’s new “Vortex Algebra”, 2018 will fit the bill.

## Electric field, Magnetism, Electricity and Birkeland Current

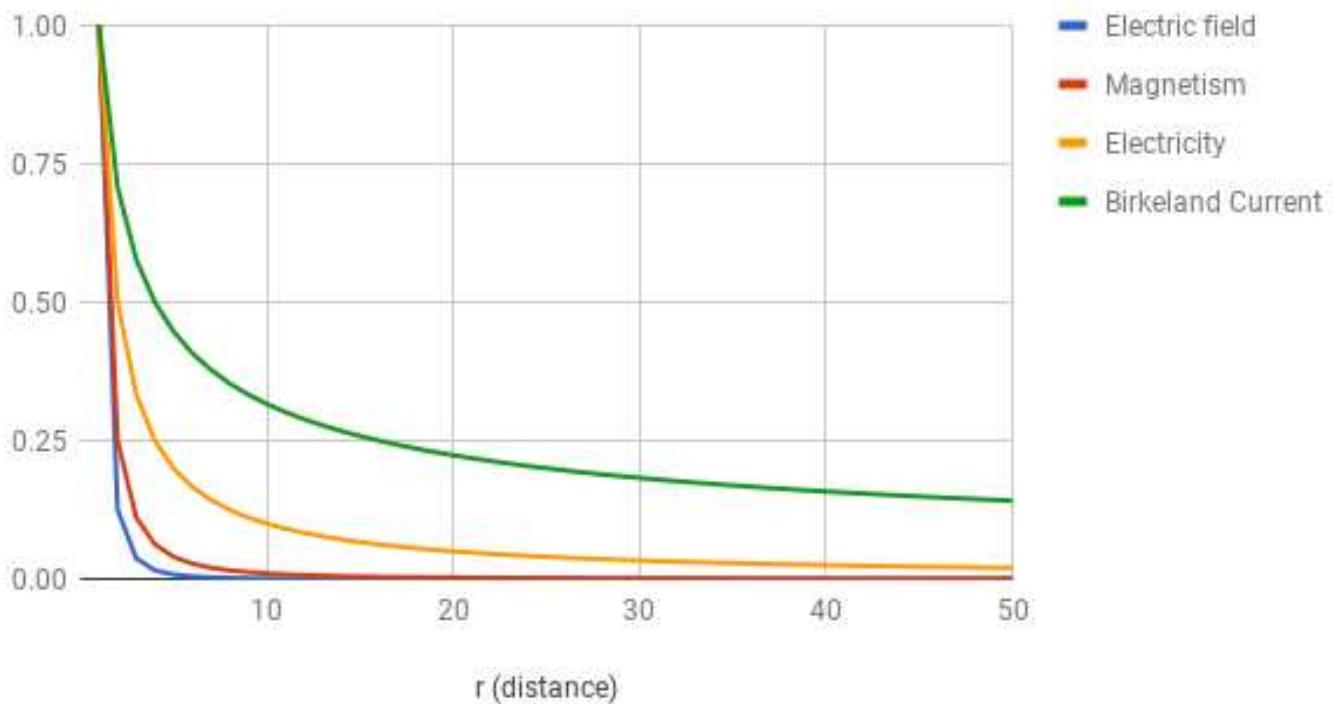


Figure 23 - Comparisons of efficiency between EMF in field, wire, and Birkeland Current form; Careaga<sup>96</sup>

The typical macro-level proof of greater than 2 layers of BC's in space is Jupiter, which will be discussed in the next part of the paper.

<sup>96</sup>

[https://docs.google.com/spreadsheets/d/e/2PACX-1vTcQhqisF1-tdf2VcAf2uubrvJj7eGpcn8O5NBU7tSGrh6KOnwdoTMFU5a3fB9NOe\\_bYcEvZTWDTY58/pubhtml?gid=0&single=true](https://docs.google.com/spreadsheets/d/e/2PACX-1vTcQhqisF1-tdf2VcAf2uubrvJj7eGpcn8O5NBU7tSGrh6KOnwdoTMFU5a3fB9NOe_bYcEvZTWDTY58/pubhtml?gid=0&single=true)

## Alfven Magnetics Tunnels Discovered

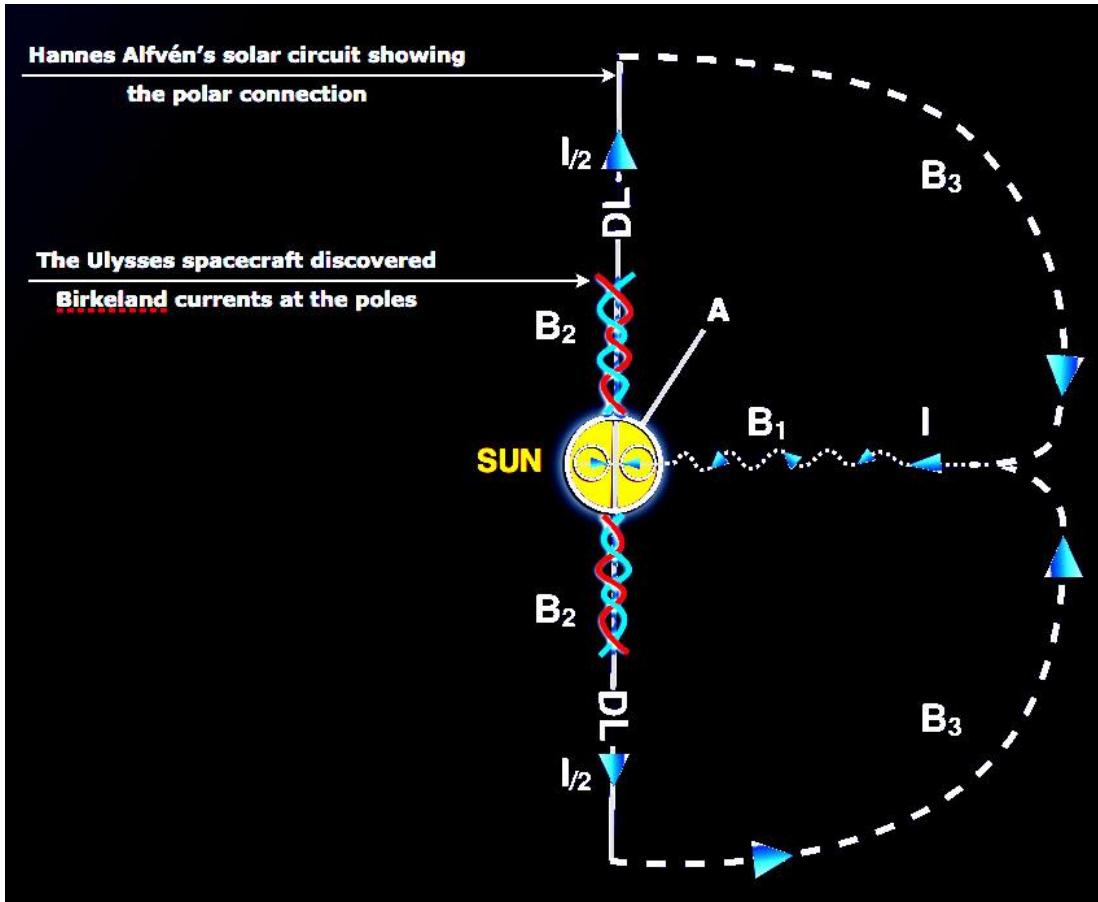


Figure 24 - Alfvénic Magnetic Tunnels discovered by Ulysses spacecraft<sup>97</sup>

Hannes Alfvén won the Nobel prize in 1970 for his work on Magnetohydrodynamics.<sup>98</sup> He took the opportunity to denounce his previous work,<sup>99</sup> and things like magnetic reconnection and frozen-in fields, and to promote an electrical analysis more along the lines of Ralph Juergens.<sup>100</sup> However Ulysses wasn't launched until 1990, and did not start returning data until 1994. Its total mission length was 18 years.<sup>101</sup> The confirmation of magnetic tunnels coming from the sun was in 2007-2008 and that confirmation changed **everything**. But, more importantly was the confirmation of magnetic tunnels (as they are called) arriving at Earth from the Sun in 2015. This truly marked the beginning of the end of fusion cosmogony and the rise of the Birkeland current (as flux magnetic ropes<sup>102</sup> and "reconnection").

Although Alfvén denounced his previous work, it has been very useful in creating new and interesting models of energy-mass connections between the sun and Earth, and between stars and galactic bodies.

<sup>97</sup> Credit: everythingelectric.com

Compare with [https://www.plasma-universe.com/Electric\\_currents\\_in\\_space\\_plasmas](https://www.plasma-universe.com/Electric_currents_in_space_plasmas)

<sup>98</sup> [https://www.nobelprize.org/nobel\\_prizes/physics/laureates/1970/](https://www.nobelprize.org/nobel_prizes/physics/laureates/1970/)

<sup>99</sup> [https://link.springer.com/chapter/10.1007%2F978-3-642-00319-6\\_6](https://link.springer.com/chapter/10.1007%2F978-3-642-00319-6_6)

<sup>100</sup> <https://www.everythingelectric.com/hannes-alfven/>

<sup>101</sup> [https://en.wikipedia.org/wiki/Ulysses\\_\(spacecraft\)](https://en.wikipedia.org/wiki/Ulysses_(spacecraft))

<sup>102</sup> <http://www.dailymail.co.uk/sciencetech/article-5371481/Scientists-predict-solar-flares.html>

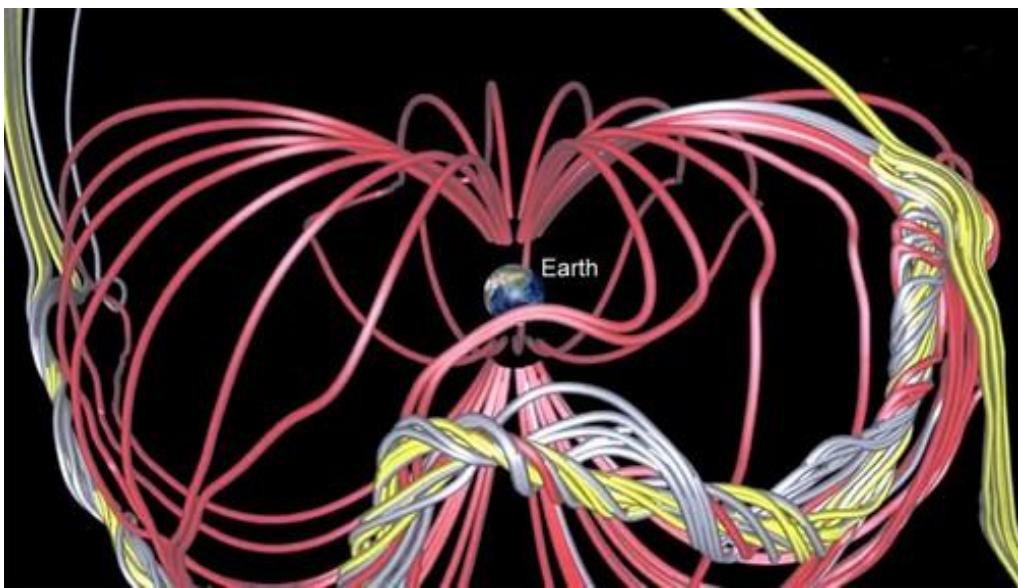


Figure 25 - Electromagnetic fields from the SSC connecting to Earth; credit: NASA<sup>103</sup>

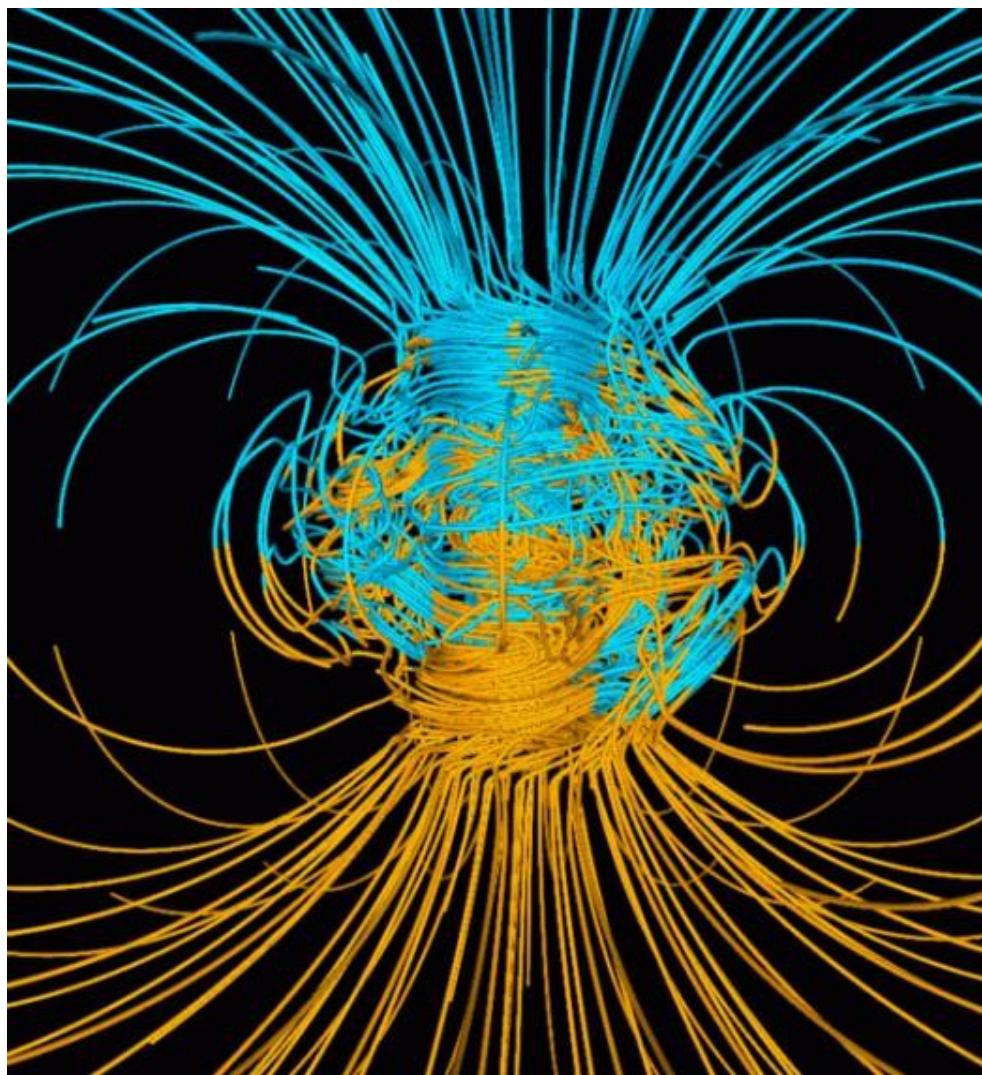


Figure 26 - Earth's Magnetosphere modeled by computer hydrodynamical methods; credit: ESA<sup>104</sup>

<sup>103</sup> <https://electrotectonics.weebly.com/electrotectonics-pg-11-19.html>

<sup>104</sup> <http://theday.co.uk/attachments/2017/02/earth-s-magnetic-poles-could-be-about-to-flip.pdf>

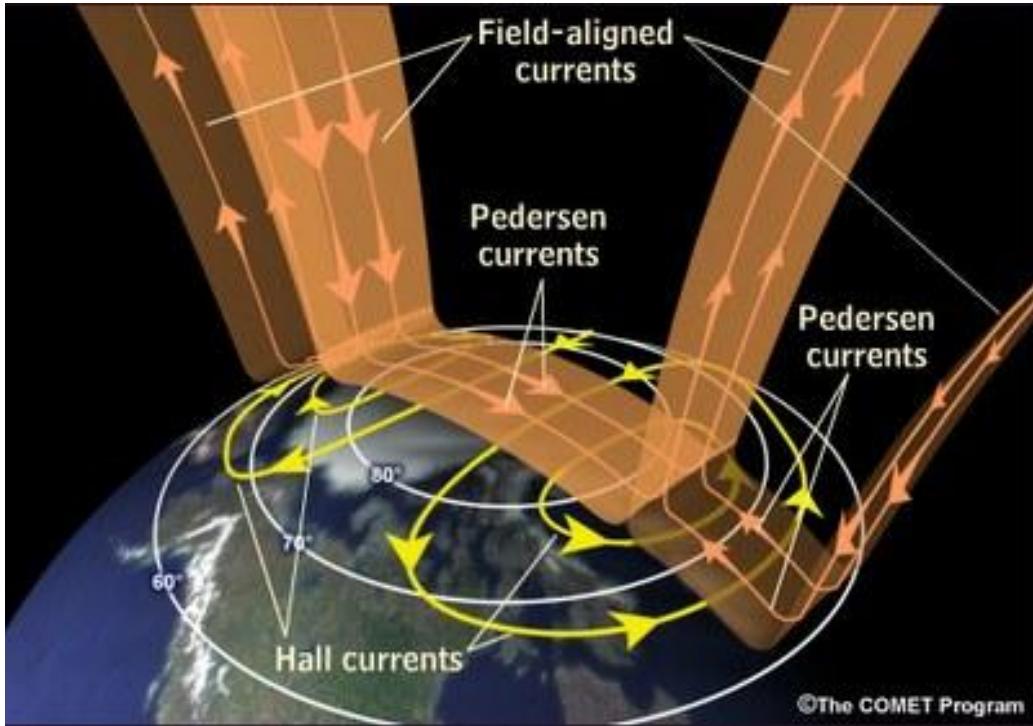


Figure 27 - Hall and Pederson “Field aligned” currents, proof of Alfvén models<sup>105</sup>; credit: ESA/COMET

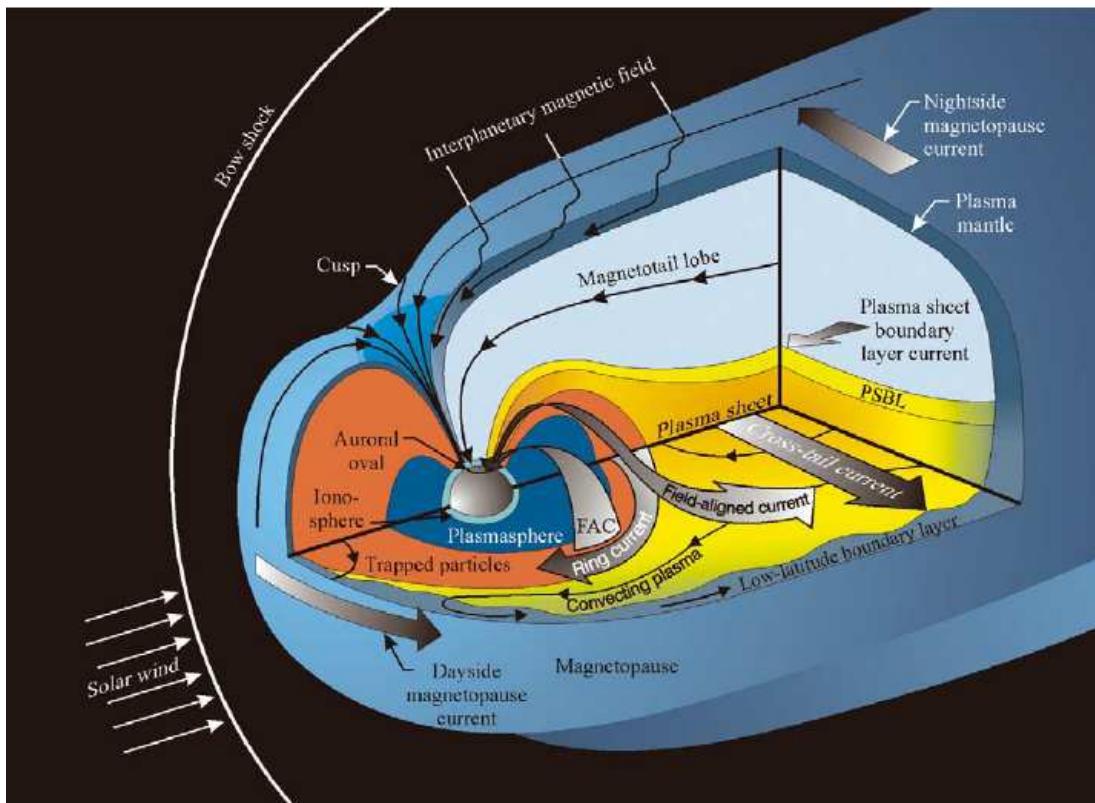


Figure 28 - Earth’s magnetosphere responding to the plasma of the solar wind.<sup>106</sup>; credit: Pollack

<sup>105</sup> University of Leicestershire, [https://www2.le.ac.uk/departments/physics/postgraduate-study/research-degrees/image-slideshow-1/auroral-currents/vie\\_w](https://www2.le.ac.uk/departments/physics/postgraduate-study/research-degrees/image-slideshow-1/auroral-currents/vie_w)

<sup>106</sup> Pollack, et al..., 2003, [https://www.researchgate.net/figure/Schematic-illustration-of-Earths-magnetosphere-illustrating-major-distinct-regions-and-fig1\\_226991880](https://www.researchgate.net/figure/Schematic-illustration-of-Earths-magnetosphere-illustrating-major-distinct-regions-and-fig1_226991880)

The results of the MMS project, launched in 2015 are yielding fantastic results.<sup>107</sup> Their aim: to prove magnetic reconnection may ultimately be the key to proving Birkeland Currents and that Alfvénic magnetism are related.<sup>108</sup> One of the previous papers cited on direct measurement of SGR A\* mentioned specifically electric currents running parallel, but 90 degrees out of phase, with the magnetic fields entering into the poles of the AGN. This is also a Scott-Alfvén prediction. Whether or not the scientific mainstream recognizes Birkeland for his contributions at long last, it will be irrelevant to the results. The sheer fact of energy-mass transportation and transformation will revolutionize all maps. For now, the current gravitic “ropes” demonstrated in the following figures will have to suffice for representations of current<sup>109</sup> and magnetic fields (so called jets and tunnels):

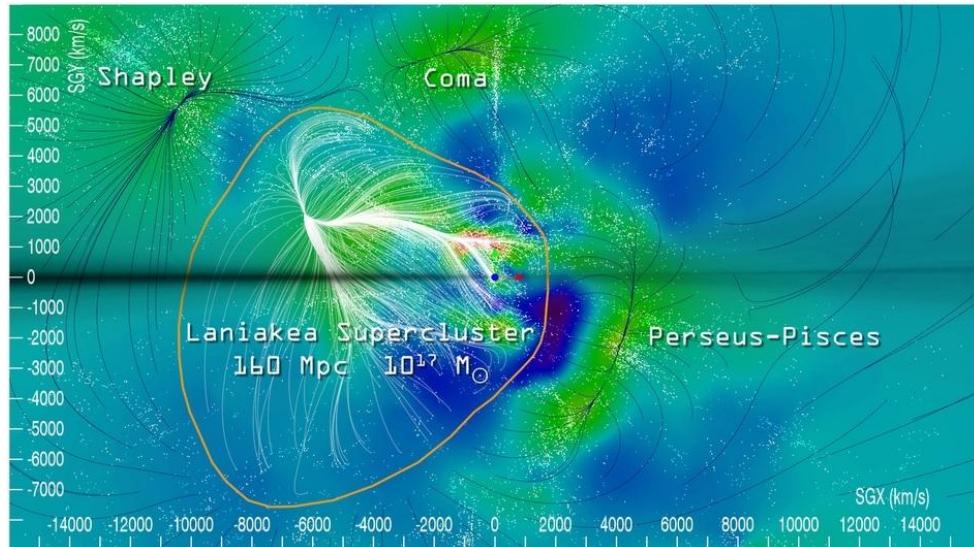


Figure 29 - Laniakea Supercluster; credit: Nature/Tully et al..

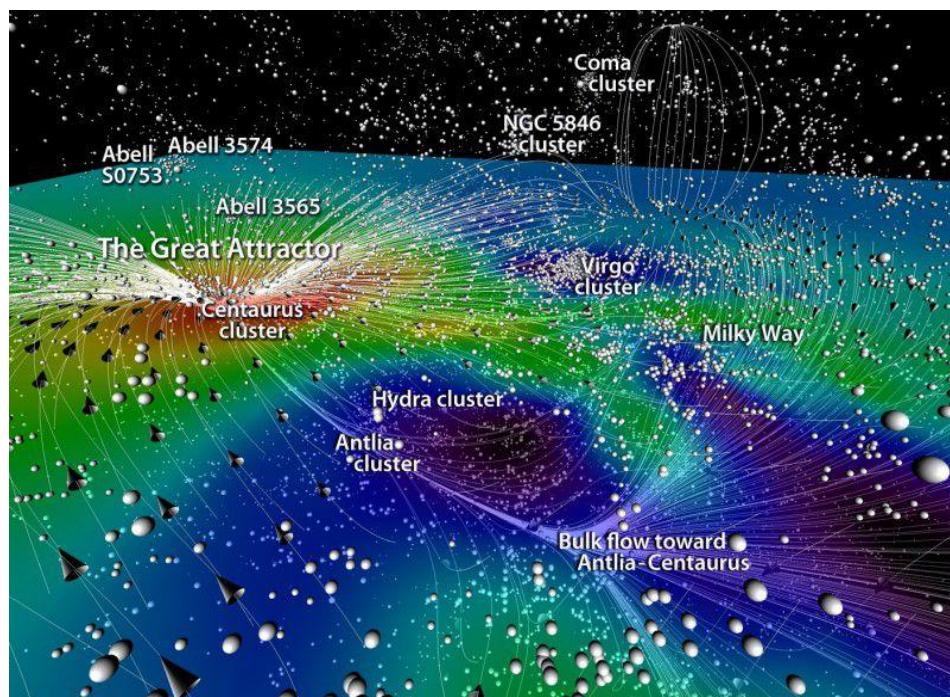


Figure 30 - The Great Attractor; credit: R Tully

<sup>107</sup> <https://www.nasa.gov/feature/goddard/2018/nasa-spacecraft-discovers-new-magnetic-process-in-turbulent-space>

<sup>108</sup> <https://youtu.be/e6fe6yiUTRY>

<sup>109</sup> Given the fact that gravity waves are originally electric, ala Henri Poincaré, and gravity is electric, the point is really a minor quibble for the 21<sup>st</sup> century.

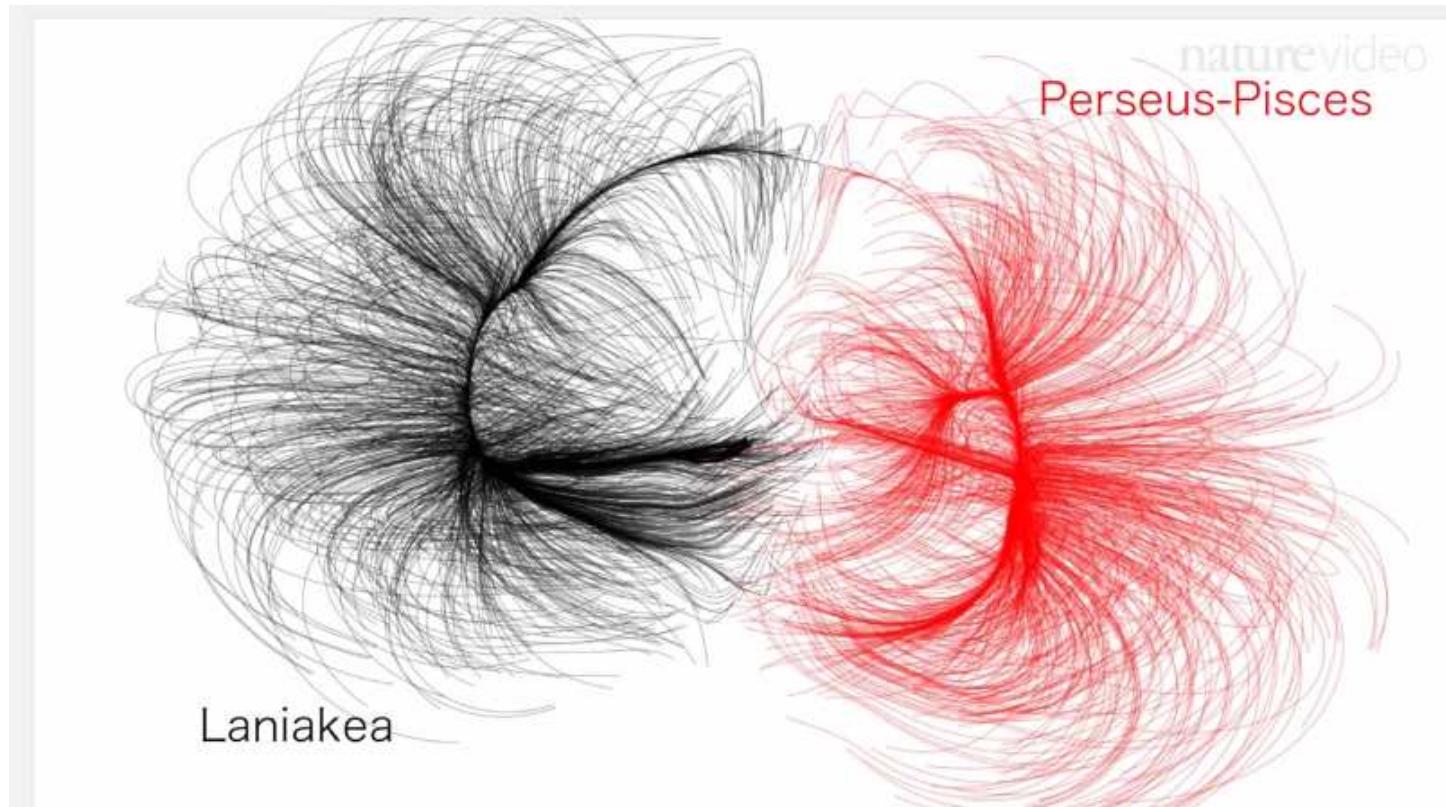
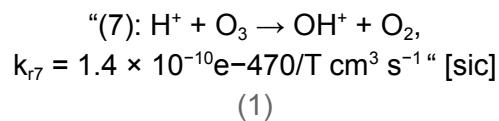


Figure 31 - Polar behavior of Laniakea and Perseus-Pisces superclusters<sup>110</sup>; credit: Nature

## Starwater

The key to Earth's unique composition is a healthy mix of metals, silicon, and oxygen. Primarily the large amounts of oxygen are what enable Earth's core/generator to produce the oceans, and ultimately life. However, there is another method, than a heavy water nuclear/chemical core that can theoretically produce water (and grow the Earth's mass): "star water."

Star water is the combination of hydrogen solar wind<sup>111</sup> with ozone in the ionosphere and upper stratosphere, chemically, to produce water or ionized water. "Free hydrogen atoms are highly reactive with ozone, and readily destroy O<sub>3</sub>..."<sup>112</sup>



The issue that remains unknown is the total rate of production. To the author's knowledge, no amount of precipitation has been determined and measured from the upper ozone layer, due to the difficulty of sending weather balloons to that altitude. There is, however, an interesting inverse correlation between the weakened

<sup>110</sup> Organization rather like mitosis, which is, of course, guided and powered by electromagnetic processes.

<sup>111</sup> Actually, some of the solar wind is not hydrogen when it leaves the sun, but mere protons. <http://www.sciencemag.org/news/2001/05/solar-wind-theory-confirmed>

<sup>112</sup> "Planetary Sciences," Pater and Lissauer, 2010

<https://books.google.com/books?id=RMEEhAwAAQBAJ&pg=PA128&lpg=PA128&dq=hydrogen+solar+wind+combined+with+ozone+chemistry&source=bl&ots=ownWVw3tFf&sig=TyJTtjUG9WZtATcz6CYabww3kk&hl=en&sa=X&ved=0ahUKEwik3diJlfraAhVJ8IMKHZ5kAxo4ChDoAQhGMAQ#v=onepage&q=hydrogen%20solar%20wind%20combined%20with%20ozone%20chemistry&f=false>

ozone layer<sup>113</sup> above the Australian plate, and the weakened magnetosphere above South America (and consequently strengthened magnetic field over Australia).<sup>114 115</sup>

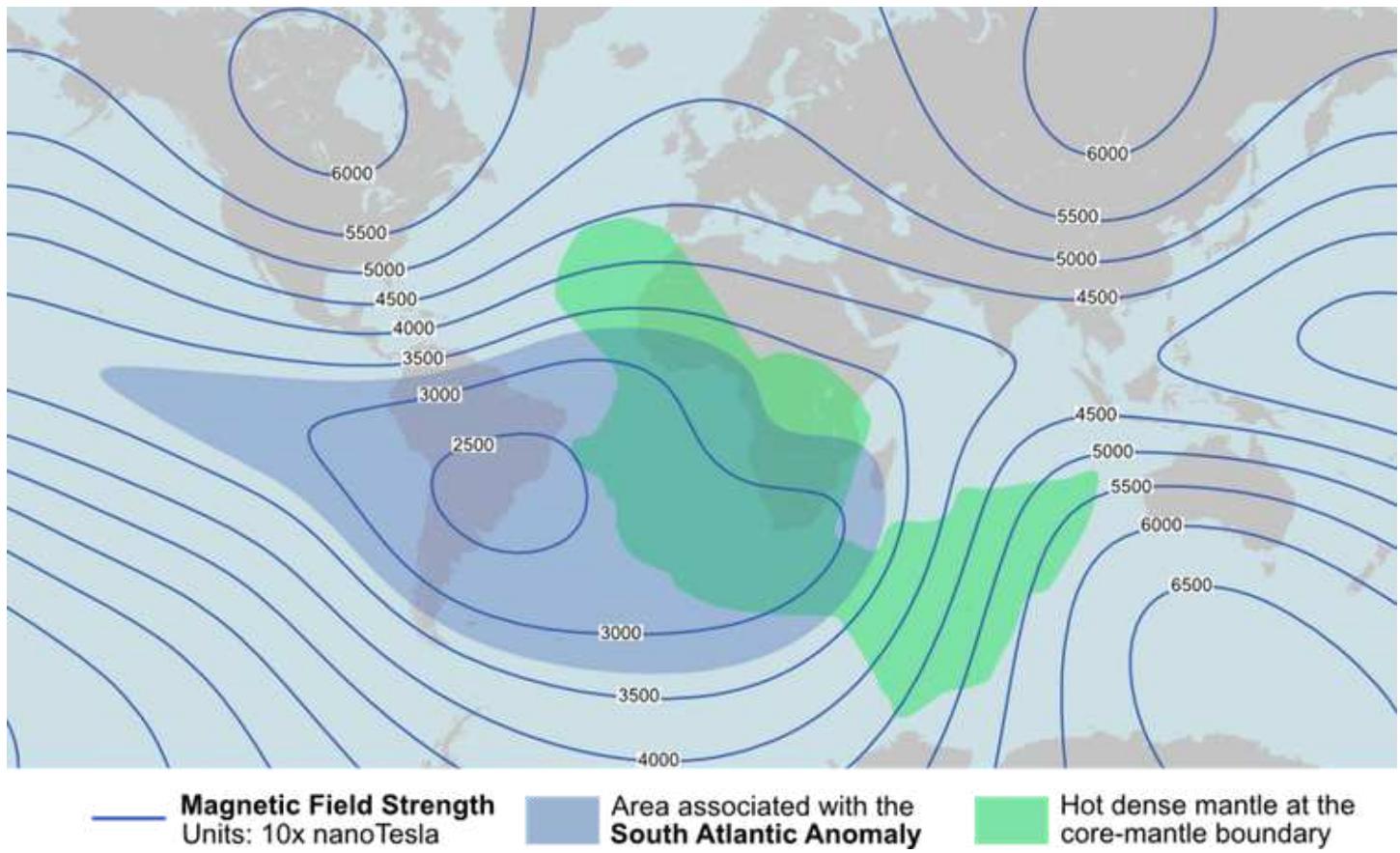


Figure 32 - Magnetic Field Strength and weakness over South America<sup>116</sup>

Is the production of starwater creating not only a hole in the ozone layer, but a weak magnetosphere? Perhaps there is a change in the E and B fields of the Earth, and that, in turn has an effect on the convection inside the mantle. This may, or may not at all, have any type of effect on the SSC, EME, or even the magnetosphere.<sup>117</sup> But if there is , after all, a charge correlation between the atmosphere and the Earth, as is postulated in this paper and by researchers such as Davidson,<sup>118</sup> U-yen,<sup>119</sup> et al... then there could be many interesting effects, not to mention dangers posed to mankind. Cataclysms in the past may have been related to pole magnetic flip.<sup>120</sup> However, this is beyond the scope of the paper.

UPDATE - It has been found, however, that there is no observable (at this time) connection between ozone effects and earthquake predictability.<sup>121</sup> If there is a mechanism in the PEMS that relates the upper atmosphere *directly* to the mantle and crust behaviors, it remains elusive.

<sup>113</sup> <https://www.nap.edu/read/4778/chapter/5>

<sup>114</sup> [https://en.wikipedia.org/wiki/South\\_Atlantic\\_Anomaly](https://en.wikipedia.org/wiki/South_Atlantic_Anomaly)

<sup>115</sup>

<http://www.dailymail.co.uk/sciencetech/article-2545465/Forget-global-warming-worry-MAGNETOSPHERE-Earths-magnetic-field-collapsing-affect-climate-wipe-power-grids.html>

<sup>116</sup> University of Rochester

<https://www.sciencealert.com/something-mysterious-under-southern-africa-dramatically-weakening-earth-s-magnetic-field-south-atlantic-anomaly>

<sup>117</sup> <https://theconversation.com/does-an-anomaly-in-the-earths-magnetic-field-portend-a-coming-pole-reversal-47528>

<sup>118</sup> [www.magneticreversal.org](http://www.magneticreversal.org)

<sup>119</sup> <https://www.youtube.com/watch?v=pQGsUmQShfU>

<sup>120</sup> [https://en.wikipedia.org/wiki/Pole\\_shift\\_hypothesis](https://en.wikipedia.org/wiki/Pole_shift_hypothesis)

<sup>121</sup> <https://www.sciencedirect.com/science/article/pii/S1364682618304140>

The main point is that the solar wind has a great effect upon the Earth and may not only be responsible for core behaviors but profound surface behaviors, far more than have been typically noted. Recently, in the upper atmosphere discoveries of unique electrical discharges have begun to be documented.<sup>122</sup>

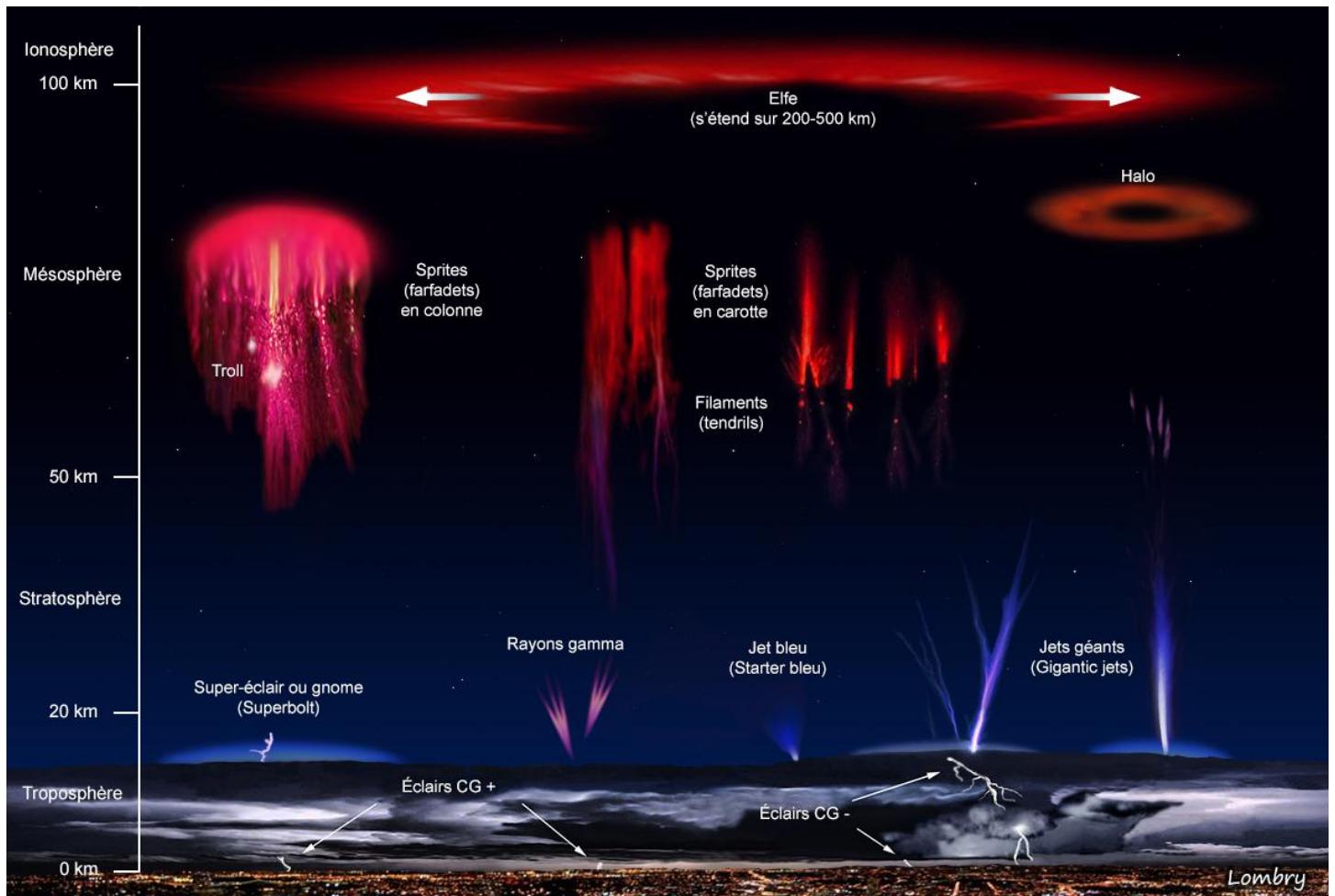


Figure 33 - Electrical discharge behaviors in the upper atmosphere; credit: Lombray

The author will return to the subjects in Figure 33 in the final part of the paper.

## Plasma Universe Cosmology

Before discussing a final model of PEMS, it will be desirable to produce a brief history and understanding of plasma cosmology and cosmogony. It is older, technically,<sup>123</sup> than the Big Bang Universe model,<sup>124</sup> and coeval to the roots of quantum mechanics<sup>125</sup>. Quantum mechanics, however, is not a cosmology,

<sup>122</sup> <https://www.thoughtco.com/sprites-and-their-siblings-1441223>

<sup>123</sup> 1896, Kristian Birkeland investigates origins of Northern Lights and formulates a hypothesis about a plasma-filled Universe and galaxies and nebulae. [https://www.plasma-universe.com/Plasma\\_cosmology](https://www.plasma-universe.com/Plasma_cosmology)

<sup>124</sup> 1920, invented by a priest, Georges Lemaître

<https://www.nationalgeographic.com/science/space/universe/origins-of-the-universe/>

<sup>125</sup> 1877, Boltzmann suggested energy could be discrete, 1887 Hertz discovered photoelectric effect, 1900 Planck proposed the quantum hypothesis to explain Hertz and Boltzmann

but a micrology. The best aspect of plasma cosmology is that it works with, and not against this quantum micrology.<sup>126 127 128 129</sup>

Relativity theory<sup>130</sup> corrupted the Poincare work and understanding of electro-gravity waves<sup>131</sup> in order to produce a new Aether theory,<sup>132</sup> and is actually mathematically at odds with a Big Bang Universe.<sup>133 134</sup> The two are irreconcilable and busy being picked apart almost daily by new research.<sup>135</sup> The guesswork of the 20th century is being replaced by hard evidence.

However, plasma cosmology essentially replaces the need for an aether (as mentioned previously), and deals squarely with macro-level electric currents, both in auroras<sup>136</sup> and space,<sup>137</sup> and in the laboratory.<sup>138</sup> Quantum mechanics, too, has been fantastically successful in lab and particle accelerator simulations and experiments. These two, and chemistry, remain the “hardest” sciences in existence. The rest have been reduced to using models (“best fit curves”), mystical mathematics (putting that lightly), and computer simulation plus 3D CGI art pieces to perform science.

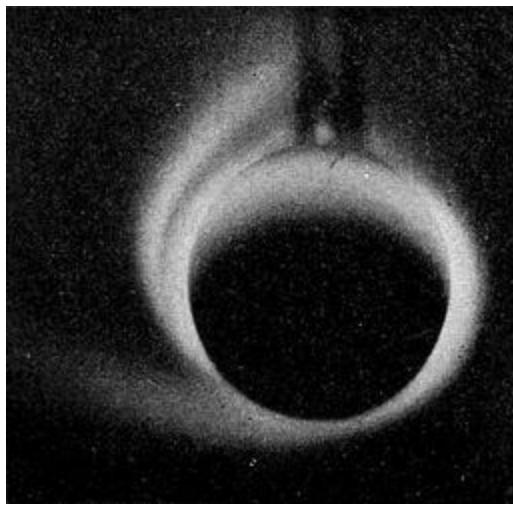


Figure 34 - Birkeland's terrella; Wiki

That isn't to say that neither have improvements to be made. Project SAFIRE<sup>139</sup> is taking the early planetary terrella experiments (see Figure 34) of the 20th century to whole new levels, and very high energy electrical experiments are conducted throughout the world.<sup>140</sup> China has launched new satellites to discover

<sup>126</sup> <https://link.springer.com/article/10.1023/A:1007362324637>

<sup>127</sup> <https://arxiv.org/abs/1503.03867>

<sup>128</sup> <https://physics.stackexchange.com/questions/136674/relationship-between-plasma-physics-and-quark-gluon-plasma>

<sup>129</sup> <http://iopscience.iop.org/article/10.1088/1367-2630/17/4/043051/pdf>

<sup>130</sup> <http://blog.press.princeton.edu/2015/11/25/einsteins-race-was-einstein-the-first-to-discover-general-relativity/>

<sup>131</sup> 1905, [https://en.wikipedia.org/wiki/Gravitational\\_wave](https://en.wikipedia.org/wiki/Gravitational_wave) (Einstein was 1916) To Einstein's credit, he acknowledged that he may be wrong, though he opposed QEM, he did after all name Tesla the real genius and stated that his zealous followers should be cautious about their beliefs in the Big Bang and GR.

<sup>132</sup> [http://www-history.mcs.st-andrews.ac.uk/Extras/Einstein\\_ether.html](http://www-history.mcs.st-andrews.ac.uk/Extras/Einstein_ether.html)

<sup>133</sup> S Crothers, <http://www.sjcrothers.plasmaresources.com/papers.html>

<sup>134</sup> <https://www.youtube.com/watch?v=jINHHXaPrWA> & <https://www.youtube.com/watch?v=hhYsOQTfYEc>

<sup>135</sup> As of the writing on this very day, the following article was released in which GAIA spacecraft disproved doppler redshift theory and proved Halton Arp correct: <https://arxiv.org/pdf/1805.03298.pdf>

<sup>136</sup>

[http://www.plasma-universe.com/Kristian\\_Birkeland?title=Special:Categories&article=Kristian\\_Birkeland#Investigating\\_the\\_aurora](http://www.plasma-universe.com/Kristian_Birkeland?title=Special:Categories&article=Kristian_Birkeland#Investigating_the_aurora)

<sup>137</sup> [http://www.plasma-universe.com/Texts:On\\_Possible\\_Electric\\_Phenomena\\_in\\_Solar\\_Systems\\_and\\_Nebulae](http://www.plasma-universe.com/Texts:On_Possible_Electric_Phenomena_in_Solar_Systems_and_Nebulae)

<sup>138</sup> [https://en.wikipedia.org/wiki/Princeton\\_Plasma\\_Physics\\_Laboratory](https://en.wikipedia.org/wiki/Princeton_Plasma_Physics_Laboratory)

<sup>139</sup> <https://www.youtube.com/watch?v=keJAQlWEyzY> & <https://www.everythingselectric.com/safire-project/>

<sup>140</sup> [https://share-ng.sandia.gov/news/resources/news\\_releases/saturn-hermes/](https://share-ng.sandia.gov/news/resources/news_releases/saturn-hermes/) | [www.sandia.gov](http://www.sandia.gov)

the extent of quantum electrodynamics, electroquakes, and atmospheric physics.<sup>141</sup> NASA, ESA, and ESO have all launched similar endeavors.<sup>142</sup>

## Langmuir-Birkeland Plasmas

No discussion of early plasma cosmology can be complete without a discussion of Irving Langmuir. He was awarded the Nobel prize for surface chemistry in 1932. However, he took the opportunity not to talk about surface chemistry, but about plasma. He is the inventor of the first, and most simple device for measuring a plasma, the Langmuir probe<sup>143</sup>, and used it to discover electron density waves in plasma<sup>144</sup> now called Langmuir waves.<sup>145</sup> Ultimately, he coined the term “plasma” in physics as well.<sup>146</sup>

Interestingly enough, he recognized bunk or “pathological science” in existence all the way back in 1953. It was Langmuir, Tonks, Marconi, Birkeland, and Juergens who took plasma physics into whole new directions of laboratory-based modeling. Essentially, men like these, or Nikola Tesla, lived in their labs, and wrote papers from the desk, rather than from fantasy. This was quite a stark contrast to the 1920s-1950s in Quantum and Relativity physics, both of which rely heavily on formulation and imagination.

## Plasma Double-Layers (Sheaths)

The origins of observation in plasma’s strange behaviors go all the way back to Birkeland and Langmuir. However the terrella<sup>147</sup> experiments of Reichenbach<sup>148</sup> and Birkeland did produce some notable behaviors which are most pertinent to this paper: plasma double layers (DL) or sheaths.<sup>149</sup> See Figure 35, from SAFIRE phase 1 paper.

The reason that these are important is that it will directly inform the membrane theory of HEGEME, as well as the Spheres/Shells in the next parts. The opposition of charges, and their self-protective arrangements, is particularly important in all of the following phenomenon:

- Planetary orbital shells
- Moon/satellite orbits
- Mutual repulsion in celestial bodies
- “Earth facing quiet”<sup>150</sup> - the protection of Earth from most solar flares
- The shape and layer distributions in stars
- The creation of life
- Cellular mitosis
- Stellar spacing (non-collision)
- Layering of the earth’s atmospheres

<sup>141</sup> <https://www.space.com/39387-china-launches-land-use-satellite.html>

<sup>142</sup> As of today’s writing, GAIA DR2 and MMS both reported back findings confirming Halton Arp and Alfven correct:

<https://www.nature.com/articles/s41586-018-0091-5>

<https://www.nasa.gov/feature/goddard/2018/nasa-spacecraft-discovers-new-magnetic-process-in-turbulent-space>

<sup>143</sup> 1924, [https://en.wikipedia.org/wiki/Langmuir\\_probe](https://en.wikipedia.org/wiki/Langmuir_probe)

<sup>144</sup> “Oscillation in ionized gases,” Langmuir and Tonks, 1929

[http://www.columbia.edu/~mem4/ap6101/Tonks\\_Langmuir\\_PR29.pdf](http://www.columbia.edu/~mem4/ap6101/Tonks_Langmuir_PR29.pdf)

<sup>145</sup> [https://en.wikipedia.org/wiki/Plasma\\_oscillation](https://en.wikipedia.org/wiki/Plasma_oscillation)

<sup>146</sup> <https://www.nature.com/articles/233219a0.pdf>

<sup>147</sup> The first terrella experiments have roots in the middle Ages, 1600, when William Gilbert wrote “De Magnete”

<http://rack1.ul.cs.cmu.edu/is/gilbert/>

[https://en.wikipedia.org/wiki/De\\_Magnete](https://en.wikipedia.org/wiki/De_Magnete)

<sup>148</sup> [https://borderlandsciences.org/project/od/article/Vassilatos\\_on\\_Reichenbach\\_Odic.html](https://borderlandsciences.org/project/od/article/Vassilatos_on_Reichenbach_Odic.html)

<sup>149</sup> [https://en.wikipedia.org/wiki/Double\\_layer\\_\(plasma\\_physics\)](https://en.wikipedia.org/wiki/Double_layer_(plasma_physics))

<sup>150</sup>

<https://stillnessinthestorm.com/2017/06/is-our-sun-conscious-evidence-suggests-the-sun-is-projecting-the-earth-earth-facing-solar-quiet-effect/>

- Cloud type formation (see next part)
- Water formation
- And more....

The layering in SAFIRE phase 1<sup>151</sup> reached a maximum of 15 DL's, but it is theoretically possible to be many more. Double layers are also seen in magnetically repulsed plasmas (Figure 36), and in nebulae, supernovae, and galaxies (see figures 37-40).

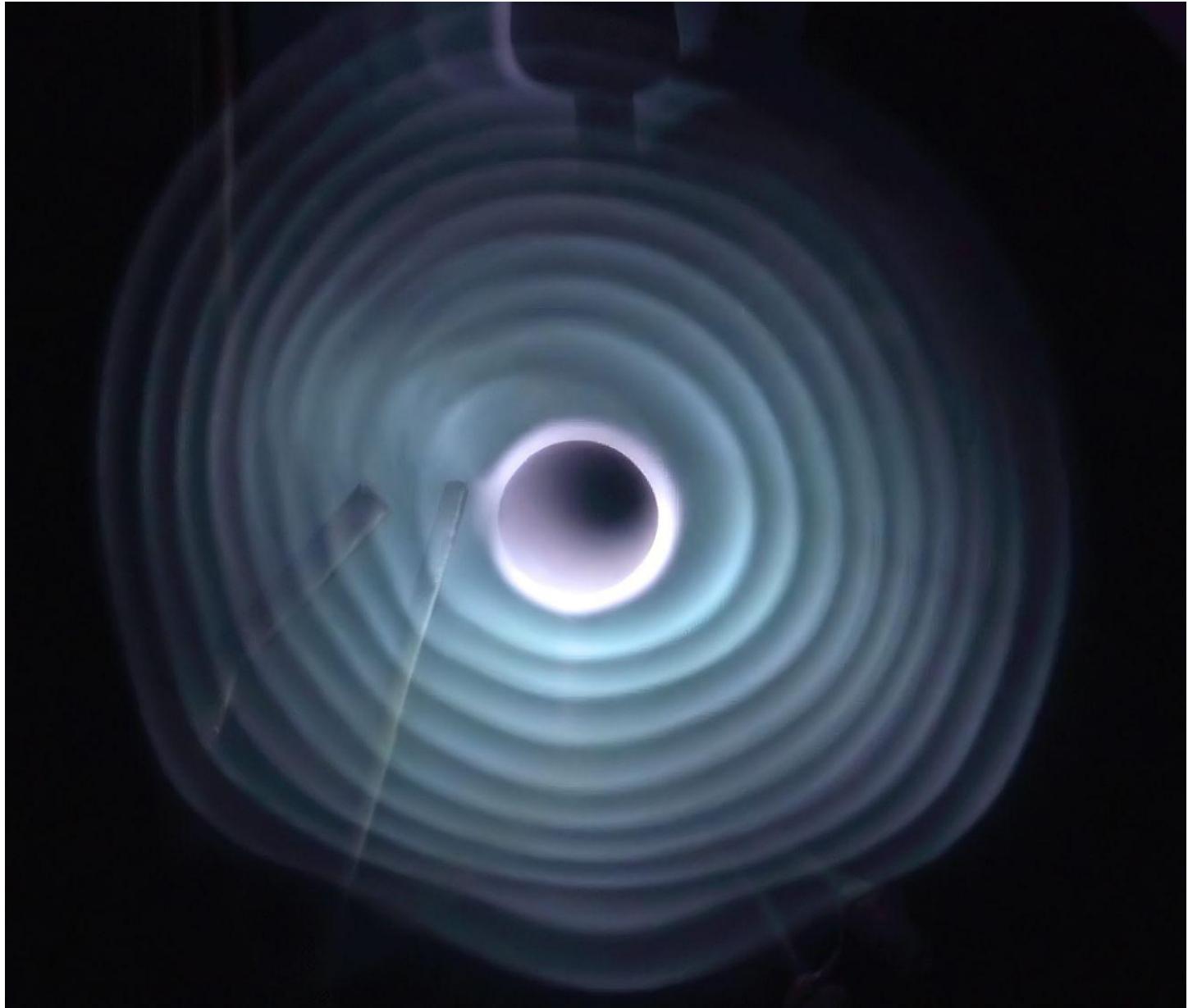


Figure 35 - Plasma double layers (Langmuir probe in background); 10 layers deep (15 max so far); SAFIRE

---

<sup>151</sup> [^]

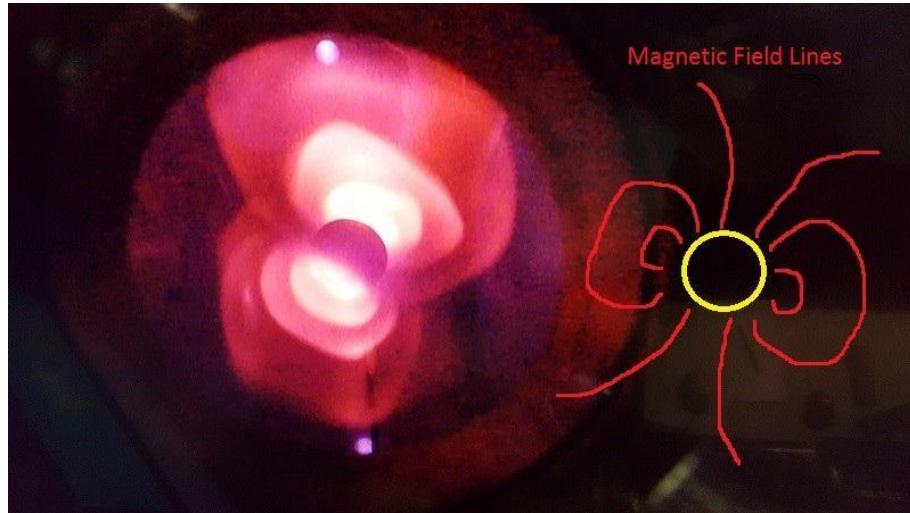


Figure 36 - Magnetism in LePointian “double bell” shape in SAFIRE phase 2

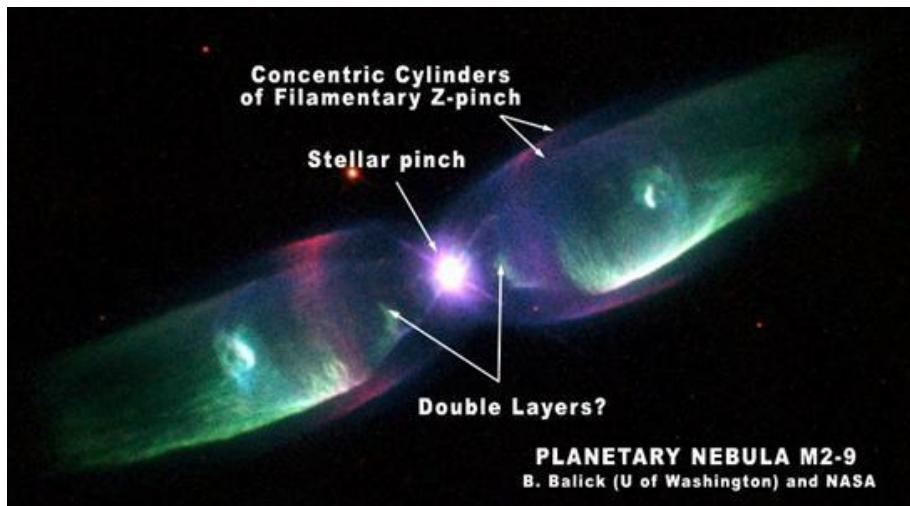


Figure 37 - Nebula M2-9 - proof that Supernova are stella Z-pinches; credit: Balick/NASA

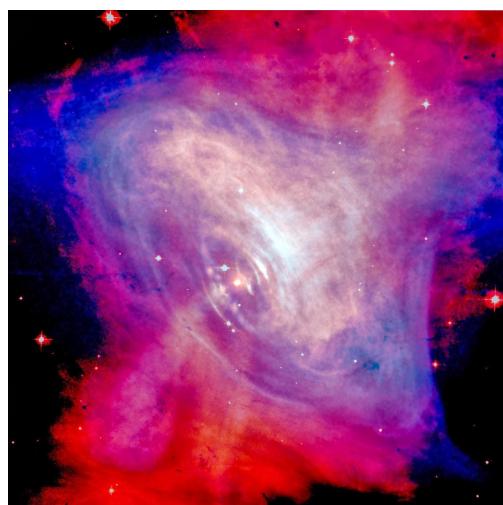


Figure 38 - false color of Crab Nebula “electric motor” and DL’s

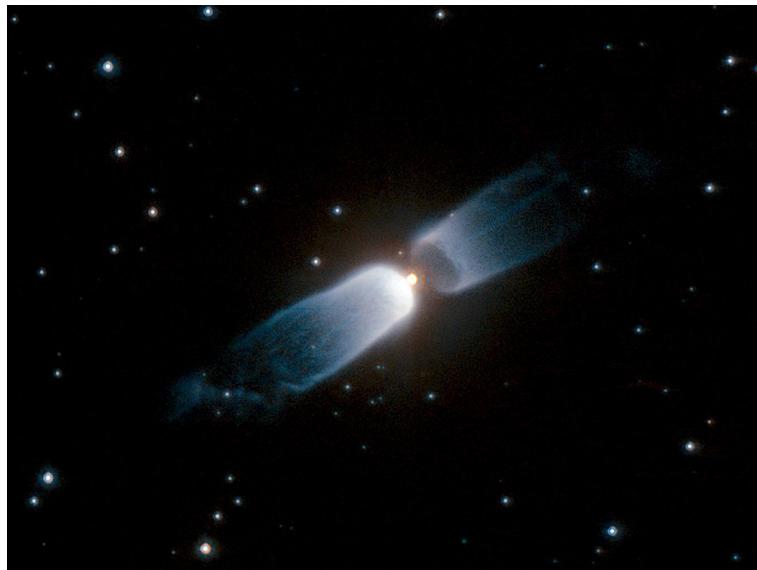


Figure 39 - Nebulae IRAS 13208-6020; credit NASA/ESA<sup>152</sup>



Peter Tuthill, Palomar / Keck

Figure 40 - Red Square Nebula; completely antithetical in gas-star fusion/gravity explosion hypotheses<sup>153</sup>

## Jupiter and Saturn

Gas giants Jupiter and Saturn have been, in the least our hosts and reflectors of sunlight and at the most possibly brown dwarf stars. It seems more likely that Saturn was more recently a brown dwarf, based on the changing pole colors,<sup>154</sup> and that Jupiter was so revered not because it was a star but because it is brightly colored. However, it is not known what Zeus-Jupiter looked like at the time. The one speculation is that the Great Red Spot was visible as an eye (eye of Horus), but that is unknown.

What is known is that to this day, several unique facts remain about each system, which defy standard cosmogony (accretion and uniformitarianism):

---

<sup>152</sup> A particularly stunning example of the failure of fusion physics to predict explosions, which of course should be going out completely spherically in gas explosions. This star isn't dead, it's excited!

<sup>153</sup> Credit: Tuthill, Keck, etc...

<sup>154</sup> <https://www.nasa.gov/image-feature/jpl/pia21049/changing-colors-in-saturns-north/>

1. Jupiter, to this day, emits more heat than it absorbs.<sup>155</sup>
2. Jupiter and Saturn have a disproportionate amount of satellites, for their mass, as compared to Sol.
3. Jupiter has fantastic examples of counter-rotation in its clouds which remains unexplainable by standard meteorology.<sup>156 157</sup>
4. Saturn has a magnetosphere the size of the surface of the sun.<sup>158</sup> (see Figure 41)
5. Jupiter emits radio waves<sup>159</sup> and EMF of all frequencies,<sup>160</sup> at high enough radioactivity to kill mammalian life.<sup>161</sup>
6. Saturn's poles are inexplicably hexagonal (according to mainstream).<sup>162</sup>
7. Jupiter has 8 massive vortices swirling on its north pole, permanently, as revealed by NASA IR scans.  
<sup>163</sup>
8. Saturn has a confirmed electrical relationship with Enceladus.<sup>164</sup>
9. Jupiter has a more powerful one with Io.<sup>165 166 167</sup>
10. Jupiter is bigger than at least one known dwarf star.<sup>168</sup>
11. Saturn's polar tilt is the closest to Mars and Earth's.<sup>169</sup>
12. Magnetic tunneling has been demonstrated all the way out to Jupiter.<sup>170 171</sup>
13. Jupiter is confirmed to affect Earth's weather, changing our climate every 400,000 years or so.<sup>172</sup>
14. Saturn's rings are made of real water, as is Europa's ice.
15. Jupiter's Great Red Spot is slowing down and shrinking.<sup>173</sup>
16. Jupiter has its own *visible* auroras.<sup>174</sup>

<sup>155</sup> <http://ircamera.as.arizona.edu/NatSci102/NatSci102/lectures/jupiter.htm>

<sup>156</sup>

<https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcRHcctv5sLPykq3WVbWtQOz5gIGPmUL1s0gc0AbygNm5aTNEmJg>

<sup>157</sup> [http://planetary.s3.amazonaws.com/assets/images/5-jupiter/2017/20170508\\_Fig-13\\_Crop-GRS-02b.gif](http://planetary.s3.amazonaws.com/assets/images/5-jupiter/2017/20170508_Fig-13_Crop-GRS-02b.gif)

<sup>158</sup> <https://www.everythingselectric.com/saturn-hot-a-ring/>

<sup>159</sup> <http://www.messagetoeagle.com/signalunknownjupiter.php>

<sup>160</sup> <http://www.spaceacademy.net.au/spacelab/projects/mhw/io-b.htm>

<sup>161</sup> <https://www.astrobio.net/news-exclusive/hiding-from-jupiters-radiation/>

<sup>162</sup> [https://en.wikipedia.org/wiki/Saturn%27s\\_hexagon](https://en.wikipedia.org/wiki/Saturn%27s_hexagon)

<sup>163</sup> <https://www.nasa.gov/feature/jpl/nasa-s-juno-mission-provides-infrared-tour-of-jupiter-s-north-pole>

<sup>164</sup> [https://www.nasa.gov/multimedia/imagegallery/image\\_feature\\_2069.html](https://www.nasa.gov/multimedia/imagegallery/image_feature_2069.html)

<sup>165</sup> <https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2008JA013968>

<sup>166</sup> <https://arxiv.org/pdf/astro-ph/0209070.pdf>

<sup>167</sup> "An electric current of **five million amperes** flows along Io's flux tube. It connects Io to the upper atmosphere of Jupiter, like a giant umbilical cord. The plasma torus is centered near Io's orbit, and it is about as thick as Jupiter is wide. The torus is filled with energetic sulfur and oxygen ions that have a temperature of about 100 thousand kelvin. Because the planet's rotational axis is tilted with respect to the magnetic axis, the orbit of the satellite Io (*dashed line*) is inclined to the plasma torus. Currents are generated as the plasma from the Io torus spreads into the vast, rotating magnetosphere of Jupiter, and these currents couple the moon to Jupiter's atmosphere where they stimulate a ring, or oval, of aurora emissions." [https://ase.tufts.edu/cosmos/view\\_picture.asp?id=1174](https://ase.tufts.edu/cosmos/view_picture.asp?id=1174)

<sup>168</sup> <http://www.eniscuola.net/en/2017/07/18/star-smaller-jupiter-discovered/>

<sup>169</sup> <http://www.setterfield.org/Astronomy/Saturn.html>

<sup>170</sup> <http://spacewx.com/jupiter/docs/JupiterAurora.pdf>

<sup>171</sup> <https://www.thunderbolts.info/wp/2014/06/16/jupiter-and-the-sun/>

<sup>172</sup> <http://www.pnas.org/content/early/2018/05/01/1800891115>

<sup>173</sup> <https://news.nationalgeographic.com/2018/02/jupiter-great-red-spot-disappear-10-years-space-science-spd/>

<sup>174</sup> <https://ancient-code.com/astronomers-have-just-made-a-fascinating-discovery-on-jupiter/>

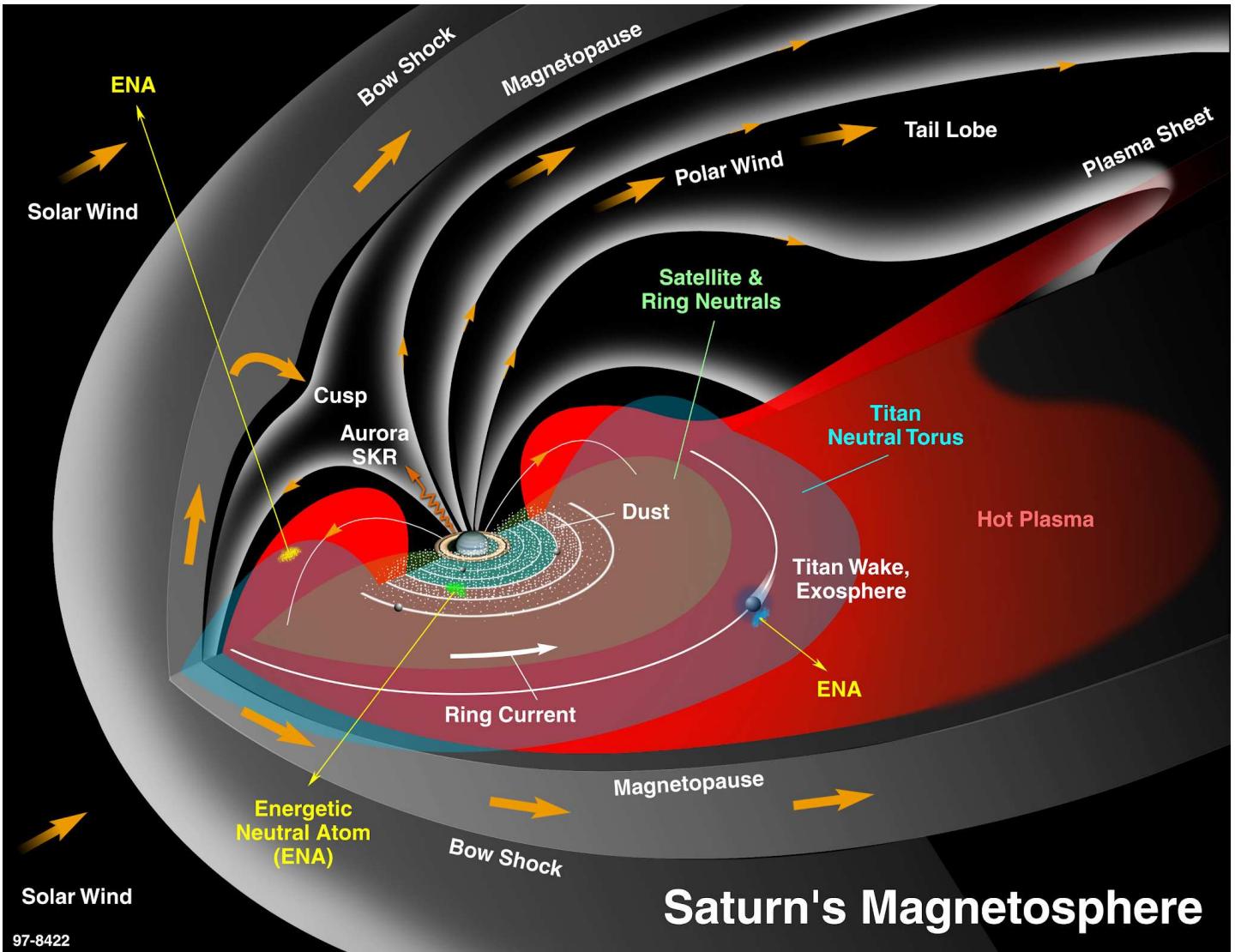


Figure 41 - Saturn's Enormous Magnetosphere; credit: NASA/Cassini<sup>175</sup>

These facts about our previous host systems - the Aesir and Vanir (or gods and titans) - make the study of these two gas giants absolutely **essential** to understanding not only how PEMS works, but how Earth's PEMS works. Because although our planet is calmer now than it was 4,000 years ago, it is still a highly active HEGEME.

<sup>175</sup> <https://saturn.jpl.nasa.gov/science/magnetosphere/>

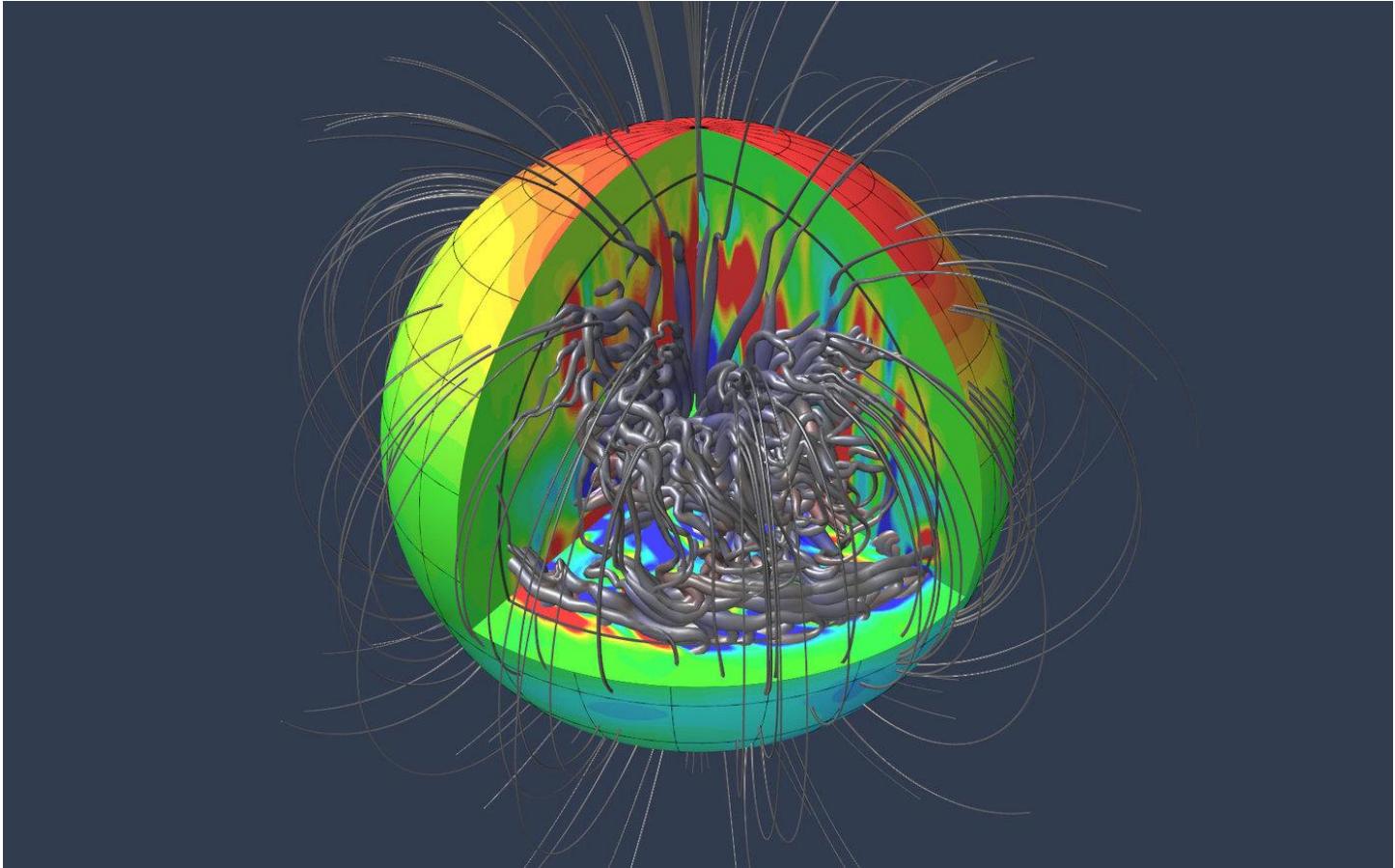


Figure 42 - Jupiter's TWO magnetic engines; credit: Planck Institute<sup>176</sup>

## Scott's Counter-Rotating Earthen Auroras Prove Birkeland Right

There is direct photographic/videographic proof of counter-rotating Birkeland auroras and currents, as presented by Donald Scott at EU2017.<sup>177</sup> The video (and Don Scott), speaks for itself. However, what the author wishes to disclose is that Robert Distinti in his own work on New Electromagnetism<sup>178</sup> and New Gravity<sup>179</sup> (as an attempt at unification), has proposed an excellent method for explaining the coriolis effect, regarding Earth gyroscopic convection currents.

Simultaneously, but quite from another direction, Dr. Eugene Bagashov has proposed a separate discussion of the Electromagnetic Sky's production of the coriolis effect at Observing the Frontier 2017.<sup>180</sup> One of the main topics of the conference was the SSC.<sup>181</sup> In specific, Bagashov spent much time talking about the Global Electric Circuit (our EME), and continued this discussion in OTF2018 in his talk about cyclones and anticyclones.<sup>182</sup>

The development of our understanding of Earthspots,<sup>183</sup> and of counter-rotating and meteorological waves in our atmosphere,<sup>184</sup> is yielding de facto proof of Earth-sized electrical currents, which break down into

<sup>176</sup> [https://www.mpg.de/8373381/two-dynamos\\_Jupiter](https://www.mpg.de/8373381/two-dynamos_Jupiter)

<sup>177</sup> <https://www.youtube.com/watch?v=bCFvNIGkbKw>

<sup>178</sup> <https://sites.google.com/site/electricuniversegateway/Distinti/ne.pdf>

<sup>179</sup> <https://sites.google.com/site/electricuniversegateway/Distinti/ng.pdf>

<sup>180</sup> <https://youtu.be/lUotufVwvIQ>

<sup>181</sup> <https://youtu.be/Ok7j7riVEUI>

<sup>182</sup> <https://www.suspiciousobservers.org/dl/february-21-2018/>

<sup>183</sup> <https://sites.google.com/site/electricuniversegateway/recent-news/earthspotsandgoesvideoossuspiciousobservers>

<sup>184</sup> <https://www.youtube.com/watch?v=Y7S9d26wZ3s>

small “eddies” of current as they distribute through the atmosphere and near outer-space.<sup>185</sup> See the next part. The following table provides an analysis of numbers of satellites vs mass for the gas giants and sun:

Table 3 - Ratios of large satellites/planetoids to Earth-masses

Body	# Satellites	Mass	Ratio
Earth	1	$0.972 \times 10^{24}$ kg ( $1 M_{\oplus}$ )	$1/(1 M_{\oplus}) = 100\%$
Sol (Sun)	[13] <sup>186</sup>	$1.989 \times 10^{30}$ kg ( $3.33 \times 10^5 M_{\oplus}$ )	.0006% <sup>187</sup>
Jupiter	53	$1.898 \times 10^{27}$ kg ( $317.8 M_{\oplus}$ )	16.7%
Helios (Saturn)	62	$5.683 \times 10^{26}$ kg ( $95.16 M_{\oplus}$ )	65.2%
Uranus	27	$8.681 \times 10^{25}$ kg ( $14.54 M_{\oplus}$ )	185.7%
Neptune	14	$1.024 \times 10^{26}$ kg ( $17.15 M_{\oplus}$ )	81.6%

## Spheres of Earth

The concept of the spheres or shells surrounding the Earth is not new. However, the concept of PEMS, combined with HEGEME, combined with the spherical shells is very new, or recent. This concept is explained in a basic way:

1. Beginning from the core of the Earth up through the Exosphere and into the Magnetosphere, where the plasma “bow shock” interacts with the sun, every spherical shell is a form of a charge differentiated surface.
2. Each surface shell has a spherical capacitance, and a conductance band, which is different in non-linear ways. This means it does not drop radially. In fact, some regions will have higher conductivity despite being further from the core or crust.
3. Each shell has a bi-layer of charge, which interacts with the adjacent layers.
4. The thickness of the layer will be dependent on not only the volume of material comprising the layer, but the conductivity, and permittivity of charge movement, as well as charge density. Temperature and enclosure will also have thermodynamic impacts.
5. The shells move with Newtonian mechanical momentum, however, this angular movement creates an induction circuit.
6. The differential of magnetic polarity in the interior creates a transformer effect of difference in turns, and enables the planet to act as a stellar transformer parallel with other celestial bodies.
7. The shells can, and do, slide across each other, often with powerful effect.

The shells behave in several ways that promote not only interaction between the Earth’s layers, and with other solar system bodies, but in a way that helps produce life, complex chemistry, and provides the energy for activity. However, and perhaps most importantly, it creates double layer sheaths of protection between them, so as to provide a self-sustaining mechanism. In this way, life, and organic chemistry in general,

<sup>185</sup> <https://youtu.be/e6fe6yiUTRY>

<sup>186</sup> Not including comets and asteroids, or Planet X/Nine

<https://www.space.com/38431-new-evidence-planet-nine-existence.html>

<sup>187</sup> This low value would suggest that the sun is a relative newcomer to the solar system or recently charged up.

can go on for long periods of time without being destroyed by massive solar radiation and celestial bombardment.

For example, Mercury and Venus are harmed by excessive thermal radiation. While Mars is hit by gamma radiation but has very cold temperatures. But Earth instead has several layers of protection of its membrane skin: 1) magnetosphere, 2) Ozone layer, 3) stratosphere (cloud reflection), 4) air currents, 5) and the troposphere, which absorbs energy-mass from the Electrothermal Vine, and turns it into storms, precipitation, wind, and lightning (plasma discharge).

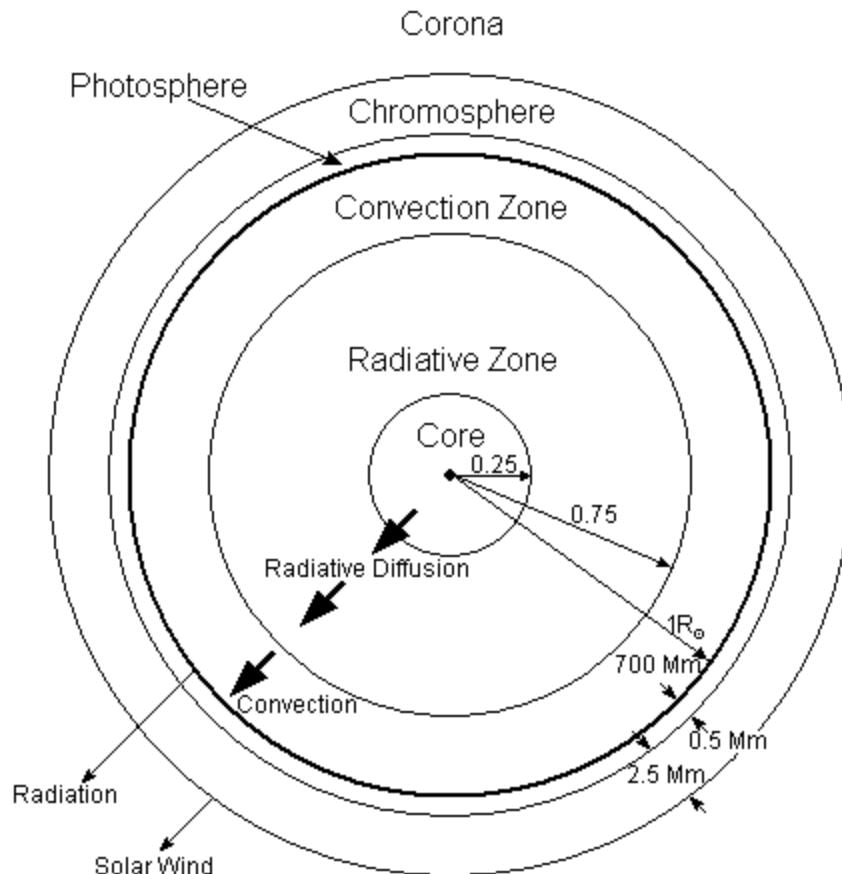


Figure 43 - Spherical Shells of Earth, with directions of movement; credit: [greatians.com](http://greatians.com)<sup>188</sup>

## Membrane Earth

Seen from the above perspective, several things become clear which before were quite confusing.

1. If life is so unlikely and “habitable zones” so hard to have rocky water-worlds in them, why is life so prolific on Earth, and advanced (despite the odds)?
 

A: Earth’s electromagnetic distribution has sufficient varying layers of charge distribution to provide a “middle sphere” upon which complex chemistry can occur, relatively undisturbed from the highly radioactive and tempestuous environment of space for long enough.
2. If life is so tenuous, why hasn’t it been wiped out, as Mars or Europa?
 

A: Earth contains a strong plasma sheath interaction layer, a magnetosphere, an atmospheric “blanket”, and a hardened crust that is still semi-fluid and is able to deform and adapt. Yet the upper protective spheres allow for complex chemistry and the introduction of new material (such as when Comet Venus’ tail dropped hydrocarbons (ambrosia/mana) onto Earth).

<sup>188</sup> <http://www.greatians.com/physics/universe/earth.htm>

3. Why does Earth always occupy a certain temperature range, and not end up in a super hot or super cold condition as it switches host stars?

A: Although Earth did have a brief period of extreme heat and drought, and has had several prolonged periods of cold snaps or ice ages, the temperature has remained within a 30 degree swing due to the complex internal-to-external electromagnetic interaction of the Earth spheres with the Heavenly sheaths/shells. This interaction has been called Gaia/Hypothesis, and has been worshipped. But it may merely be a matter of self-emergent properties of charge distribution. The reader should bear in mind that temperature changes the electromagnetic behaviors of the *same atoms and molecules*, often within short ranges. For example water or carbon dioxide, which have obvious discrete boundaries of temperatures where behaviors change suddenly and markedly. Both are noted to be, important molecules in the mediation of life. This is not an accident, but a strongly suggestive self-emergent property of electromagnetic charge density, distribution/arrangement, and flux density. As the energy flow changes in constriction or expansion, so too, does the pattern of arrangement, and this informs the charge to change and rearrange, which renews the system.

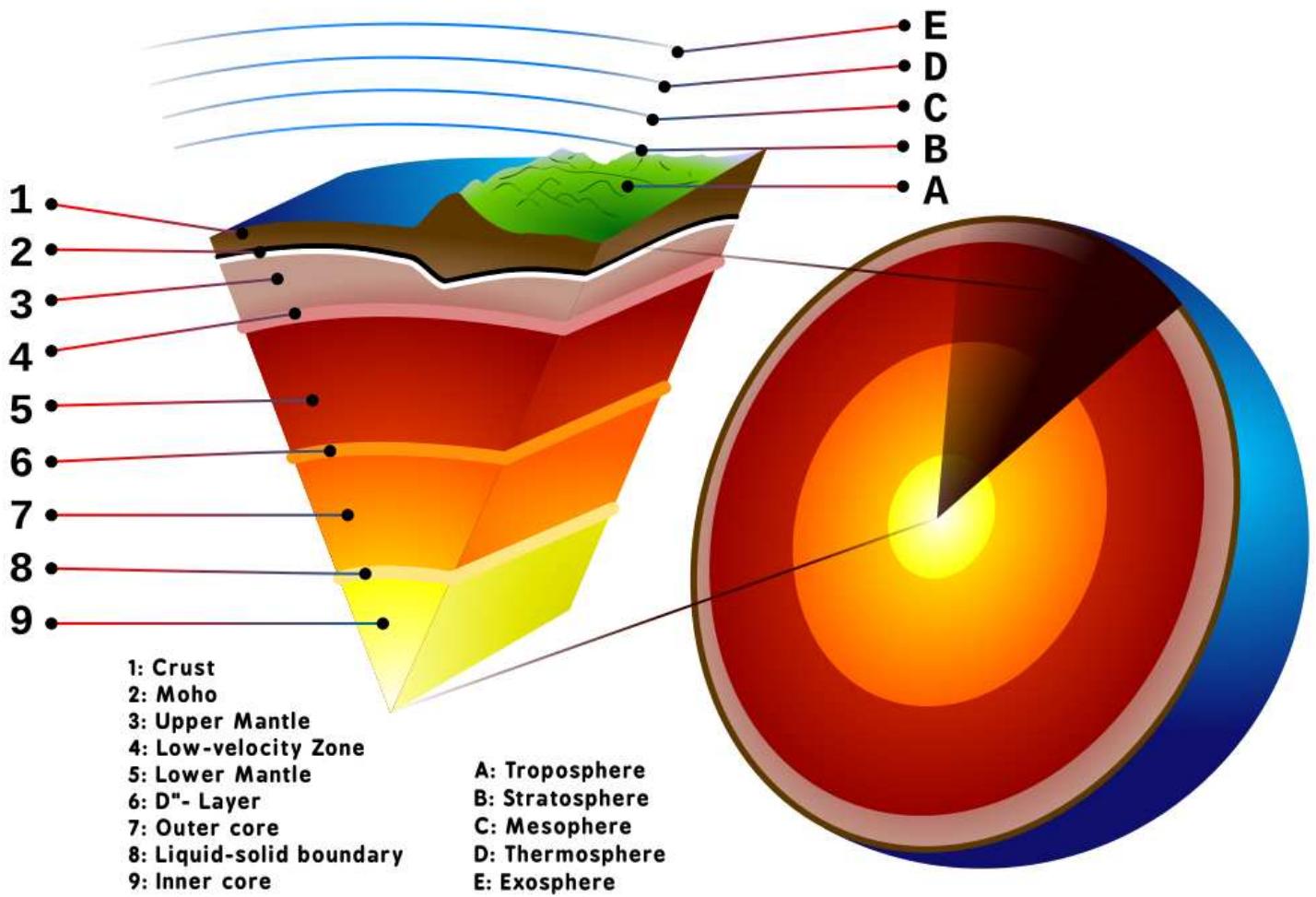
The Spheres of Earth also have incredibly different properties of: a) conductive speed of sound, b) electrical permittivity, c) freezing and condensation temperatures, d) buoyancy,<sup>189</sup> e) velocity profiles, and f) molecular arrangement *proclivities*.

On this final note, for example, the Earth's mantle clearly has the right electrodynamic to propel a seemingly unending perpetual motion machine of churning magma (4.5 billion years and still ticking). Similarly, the most volcanic surface in the SSC, has just such a property. However, the Earth has a much more stable crust region which cools and simultaneously vents pressure from this magma engine. This enables the formation of complex soil types wherein the uniquely rich chemistry of ores is enabled to become microscopic and dynamic. The very *thin* boundary of this membranous sphere is known as soil, and there are many types of soil, but all lay above the lithosphere and below the troposphere.

It could be argued that the membrane starts as deep as the Asthenosphere, which forms a spongy barrier between the mantle and the lithosphere which interfaces with it (acting therefore like an oil or grease in an engine). It would then also include the lower atmospheric layers of the troposphere, specifically all of the cloud layers below cirrus clouds and the Jet Stream, which provide precipitation.

---

<sup>189</sup> The buoyancy of clouds, and the way that their crystals or droplets, as the case may be for different clouds, rearrange is all related to the altering charge distribution properties of the layer of atmosphere and pressure zone. Temperature alone cannot account for how a ship weighted cloud, let alone one that weighs as much as a city, can stay afloat in thin air. The size of megahail also tells us that something more than wind's momentous forces must be at play keeping precipitation afloat, until it moves to a differently charged region of crust, where it is then relieved of repulsion and allowed to fall. The charge, equalized, then reforms difference in other regions. Certain areas, then, such as deserts, must have extremely repulsive distribution fields. The fact of thermal effects is not firmly established in deserts as Antarctica is the driest desert on Earth, and also the coldest.



## Spheres of Heaven

The final piece to the puzzle is nothing short of completely annihilating the idea of an “empty space” which is devoid of form, function, and charge. Nothing can be further from the truth. From floating current sheets in space<sup>190 191</sup>, to gigantic filaments that are kiloparsecs long,<sup>192</sup> to aforementioned galactic clusters and superstructures, and indeed the very filamentary/lichtenberg shaped arrangement of the Universe’s galaxies itself (see Figure 45): the entirety of space is interacting plasma sheaths in a multitude of electromagnetic determined shapes. Our part in it all is changing, as we leave behind a dusty portion obscuring our view of the galactic core,<sup>193</sup> and therefore become more exposed to the GEC and cosmic rays.<sup>194</sup>

Just what is the role of the PEMS in mediating this interaction with the Spheres of Heaven? It seems to be nothing short of miraculous that it happens to protect our fragile ecosystems here on the tenuous surface. Perhaps it isn’t a miracle so much as a design. Perhaps it is inevitable in the self-emerging, fractal/nonlinear nature of our evolving cosmos. Nobody knows for sure. However, it is certainly the opposite of the dead,

<sup>190</sup> <https://phys.org/news/2012-08-thin-current-sheets-space-action.html>

<sup>191</sup> <https://arxiv.org/ftp/arxiv/papers/1805/1805.03664.pdf>

<sup>192</sup>

<http://www.dailymail.co.uk/sciencetech/article-28573/Great-Wall-Space-Galactic-Superclusters-billion-light-years-away-extent-for-5-the-length-of-obs.html>

<sup>193</sup> <http://www.astronomy.com/news/2014/06/3-d-map-shows-dusty-structure-of-the-milky-way>

<sup>194</sup> <https://arxiv.org/pdf/1006.0064.pdf>

boring, Newtonian space believed in for the previous 150 years. The cosmos is less like a clock (or an Einsteinian clock<sup>195</sup>), as it is like a pulsating organism, indeed, rather like a brain. Energy-mass and photons (whatever they are), acting as neurotransmitters and hormones? Some think so.<sup>196</sup>

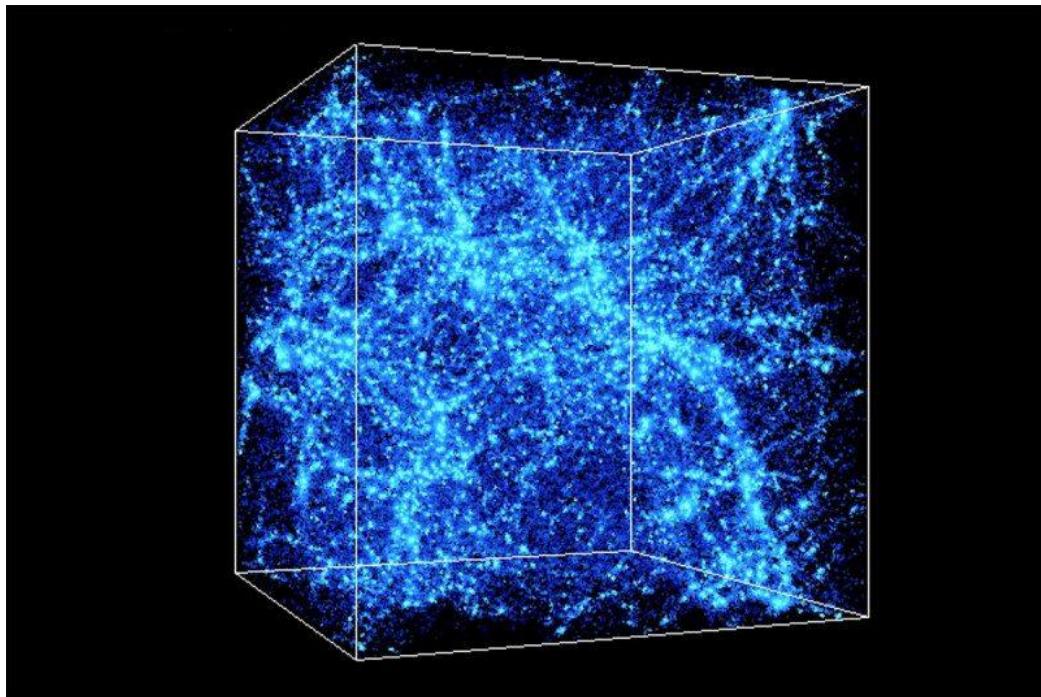


Figure 45 - The Universe seen with half the matter found (as baryons).<sup>197</sup>; credit: A Kravtsov

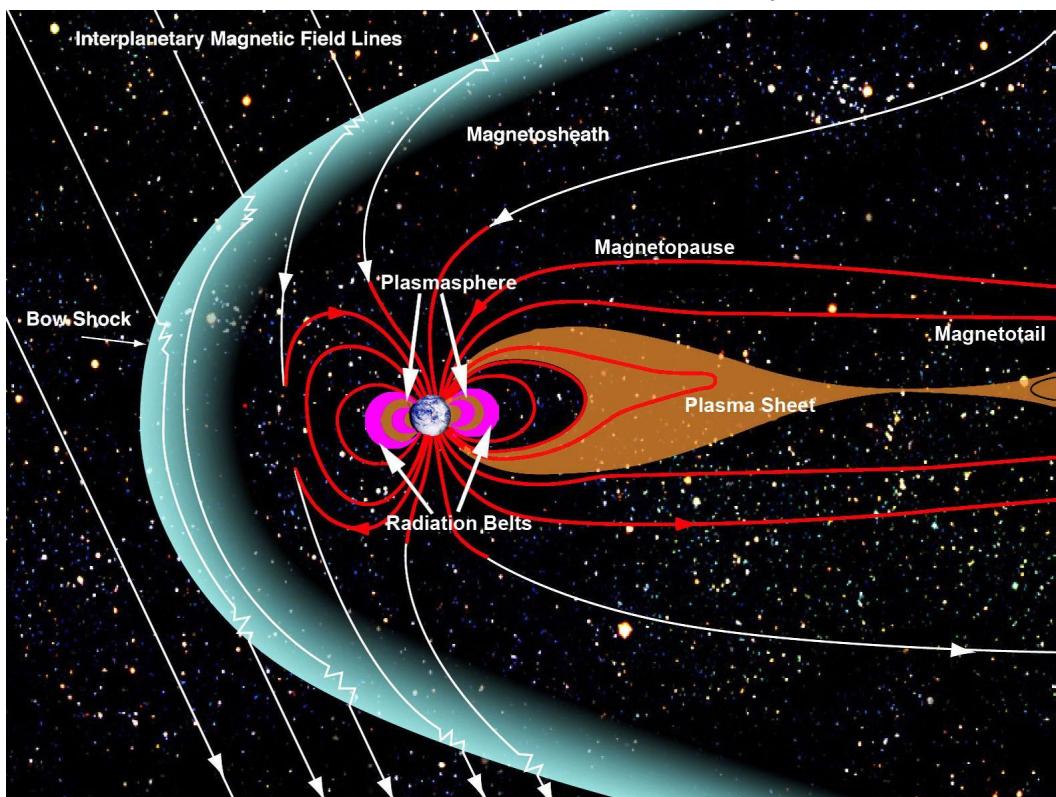


Figure 46 - Spheres of Heaven are nothing short of plasma layer interactions, frequently described using magnetohydrodynamics (rather than plasma physics, despite Alfvén's warnings)

<sup>195</sup> <http://vixra.org/pdf/1702.0214v1.pdf>

<sup>196</sup> [https://www.huffingtonpost.co.uk/2012/11/27/physicists-universe-giant-brain\\_n\\_2196346.html](https://www.huffingtonpost.co.uk/2012/11/27/physicists-universe-giant-brain_n_2196346.html)

<sup>197</sup> Note: baryons are quarks (measured in eV).

<https://www.newscientist.com/article/2149742-half-the-universes-missing-matter-has-just-been-finally-found/>

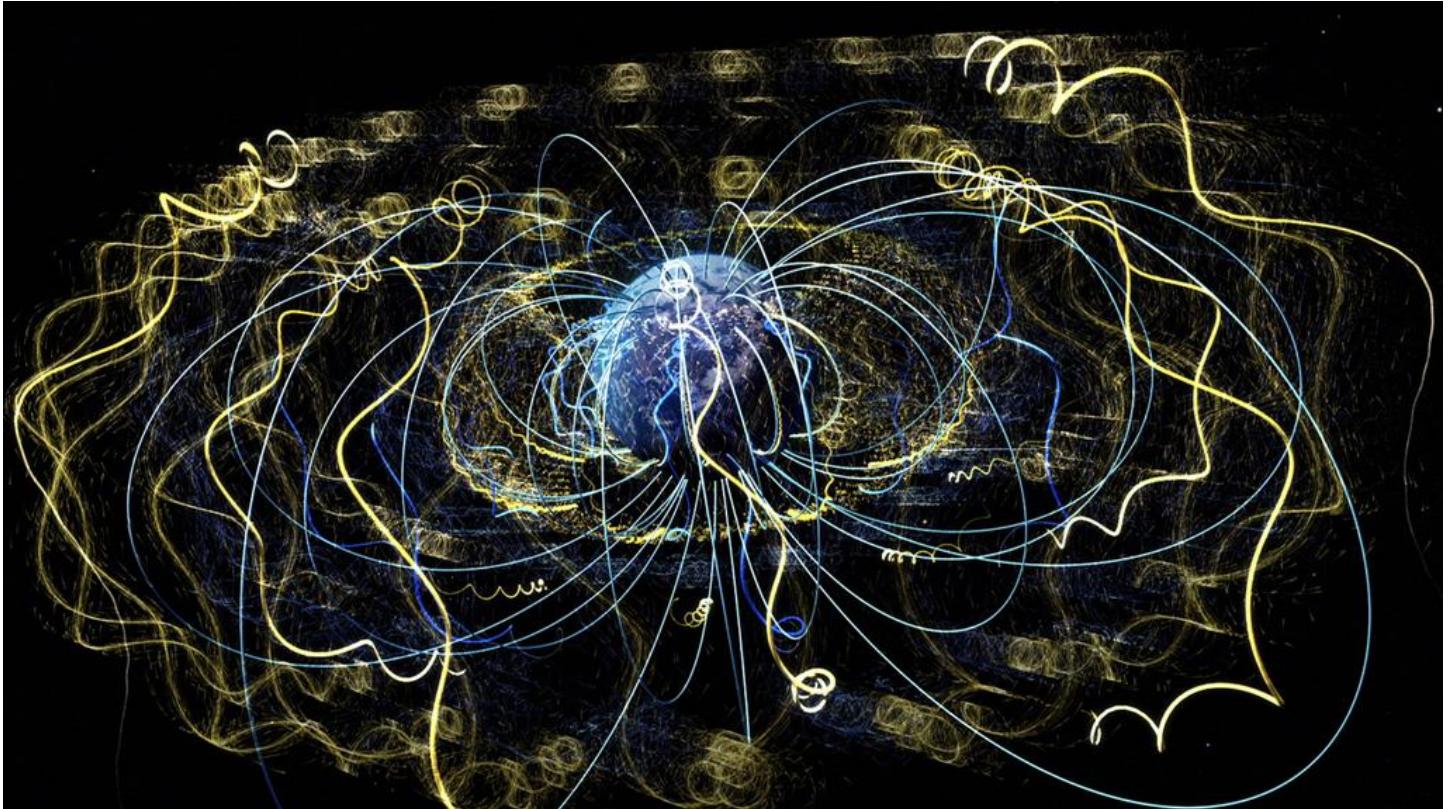


Figure 47 - Earth's Dynamic Magnetosphere; credit: NASA<sup>198</sup>

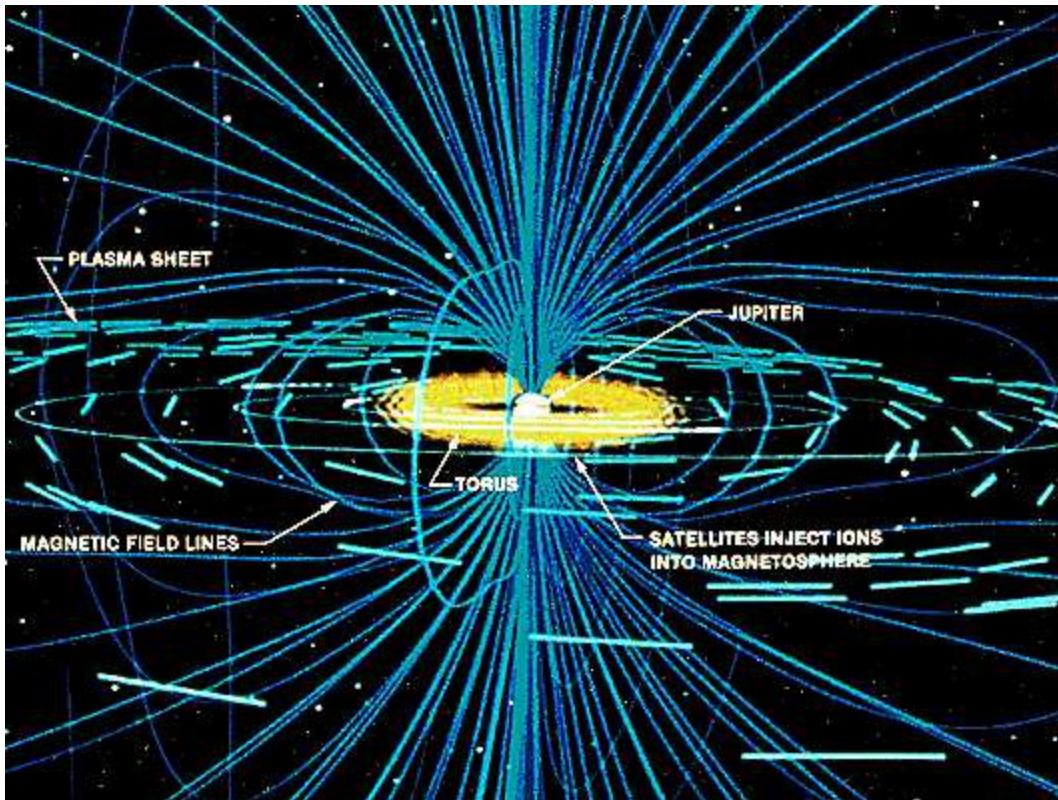


Figure 48 - Jupiter's Magnetosphere<sup>199</sup>; credit: NASA

<sup>198</sup> <https://svs.gsfc.nasa.gov/12249>

<sup>199</sup> <http://www.pas.rochester.edu/~blackman/ast104/jmagnetic.html>

## Sprites, Elves, Pixies, and Gnomes

It is strange that the meteorological sciences have embraced such whimsical terminology, given these phenomena are quite real. In Figure 33 the different types of upper atmospheric lightning discharge were on display.<sup>200</sup> The study of these is a relatively new affair.<sup>201</sup> Only within the last few years has photographic proof and satellite imagery as well as measurement proven their existence, which had been reported by pilots, without documentation.<sup>202</sup> As difficult as it is to capture typical ground-to-sky lightning, until only recently as slow motion photography has geometrically improved as well as prediction techniques, it is far more difficult to capture lightning *above* the clouds.<sup>203</sup>

What is known about these strange forms of lightning, aside from their color differentiation, is that they are very high energy, and they are related to the sun.<sup>204</sup> Certain coronal behaviors, such as solar flares, can induce massive electrical arc discharges in the ionosphere, which would not always be visible from the ground.

1. Sprite - "large-scale electrical discharges which occur high above a thunderstorm cloud, or cumulonimbus, giving rise to a quite varied range of visual shapes. They are triggered by the discharges of positive lightning between the thundercloud and the ground."
2. Blue Starter/Jet - "believed to be initiated as "normal" lightning discharges between the upper positive charge region in a thundercloud and a negative "screening layer" present above this charge region. The positive end of the leader network fills the negative charge region before the negative end fills the positive charge region, and the positive leader subsequently exits the cloud and propagates upward."
3. Gnome - "a different manifestation of blue starters but appear with a more compact shape above convective domes."<sup>205</sup>
4. Elf/Elves - "rapidly expanding (up to 300 miles across) disk-shaped regions of luminosity, lasting less than a thousandth of a second, which occur high above energetic cloud-to-ground lightning of positive or negative polarity. Elves most likely result when an energetic electromagnetic pulse (EMP) propagates into the ionosphere. Though they can be accompanied by sprites, the causative mechanism is of an entirely different nature."
5. Halo - "diffuse disk shaped glows that apparently precede sprites and propagate downward from about 50 miles to 40 miles (85 to 70 km) altitude and last about a millisecond."
6. Pixies - "pinpoints of light, lasting less than 16 milliseconds, on the surface of convective domes that produced gnomes."

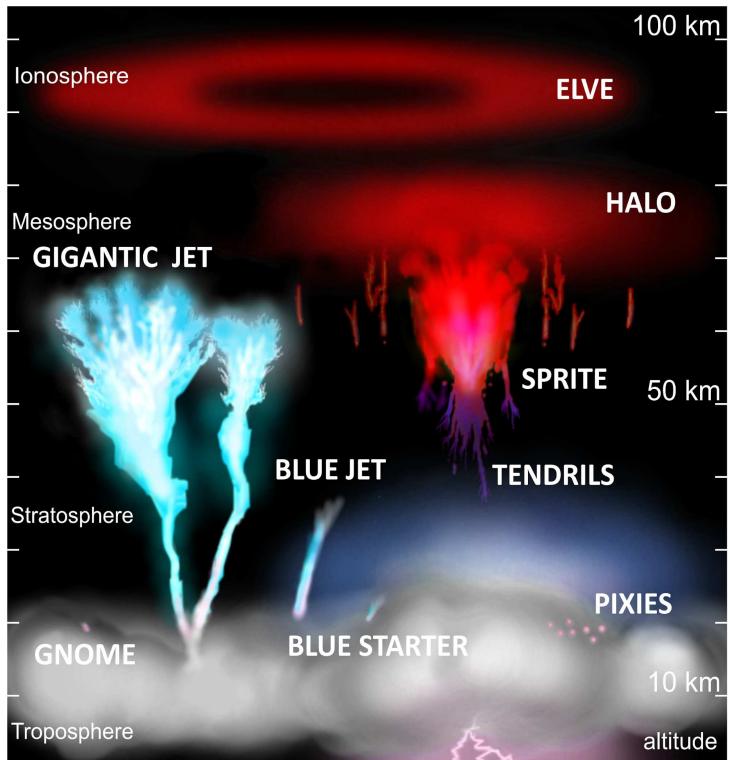


Figure 49 - Atmospheric Levels of Sprites; credit: ESA

<sup>200</sup> [https://en.wikipedia.org/wiki/Upper-atmospheric\\_lightning](https://en.wikipedia.org/wiki/Upper-atmospheric_lightning)

<sup>201</sup> <https://www.livescience.com/42731-weird-lightning-types.html>

<sup>202</sup> 1989. In 1994, videographic proof provided by USAF <https://www.youtube.com/watch?v=0f55uFtHQoE>

<sup>203</sup> <https://www.youtube.com/watch?v=zLYPKuoxH1c>

<sup>204</sup> <https://agupubs.onlinelibrary.wiley.com/doi/pdf/10.1029/2009JA015026>

<sup>205</sup> <https://www.albany.edu/faculty/rgk/atm101/sprite.htm>

7. Gigantic Jet - "initiate between the upper positive and lower negative charge regions in the thundercloud."
8. Trolls - "resemble blue jets, but are red and seem to occur after tendrils of vigorous sprites extend downward toward the cloud tops."
9. Dark Lightning - "terrestrial gamma-ray flashes are so bright that they are able to blind sensors on satellites many hundreds of miles away, and can actually create antimatter (particles that have properties opposite normal particles)."
10. Positive Lightning - "Most cloud-to-ground lightning is "negative lightning," where the initial leaders are negatively charged. However, the electrical fields involved with positive lightning are typically much stronger than with negative lightning, making them far more lethal and damaging than negative lightning. Less than 5 percent of all cloud-to-ground lightning is positive lightning. However, the most common form of lightning is not cloud-to-ground, but "intra-cloud" lightning that arcs within thunderclouds, and most intracloud lightning is positive."
11. Ball Lightning - "fiery orbs ranging in size from a golf ball to a very large beach ball (1 to 100 centimeters). These glowing spheres can be white, yellow, red, orange, purple or green, and can live for seconds or even minutes."
12. Volcanic Lightning - "may come in many shapes and forms including St. Elmo's fire(ball lightning), bolt lightning, sheet lightning, or a combination as was the case during the eruption of Mt. St. Helens in 1980 when several people witnessed long lasting shows of sheet lightning which was accompanied by volkswagen sized St. Elmo's fire bouncing and rolling on the ground nearly 25 miles from the volcano."

<sup>206</sup> <sup>207</sup>

---

<sup>206</sup> <http://volcano.oregonstate.edu/volcanic-lightning>

<sup>207</sup> <https://www.youtube.com/watch?v=rVBn8R4qzYQ>

# Conclusion

Certainly something very mysterious and  *is happening, and yet “not happening” (*wu wei* - of itself). This interaction the Chinese early scientists noted was not merely a *Unified Field* (*Dao*), but a constant mutual exchange of polar forces (known as *yin & yang*, see figure 47). It was said that the interaction of these was all of these following principles **at once**:*

1. Infinitely divisible into one another.
2. Mutually generative.
3. Mutually consumptive.
4. Mutually regulating.
5. Mutually opposing.
6. Mutually complementary/self-seeking.

Figure 50 - Peratt's Birkeland Simulation

Are these six properties not precisely the conditions and behaviors found in electromagnetism and plasma double layers? More than three thousand years later, the Chinese scientists are being proven correct (for having observed in the sky what we can produce in lab). Yet, our scientific culture has devolved into a political contest of popularity, celebrity, and technological “gizmo” hunting.

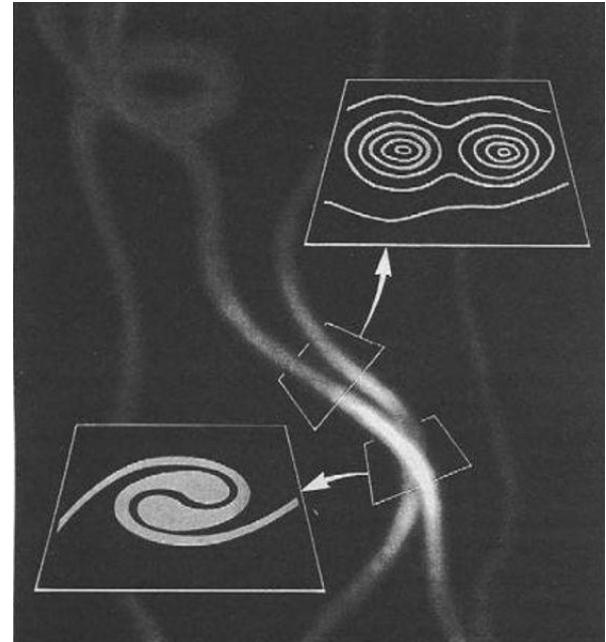
The irony is, that while we struggle against the laws of energy here on the surface of our homeworld, up in the highly dangerous Spheres of Heaven lies more energy than we could ever use or be interested in having. What seems impossible (in terms of supporting populations, or producing clothing, heat, shelter, and comfort), is actually just a mere thousands of miles up above us and on the moon and in nearby asteroids. Or below us in deep mineral deposits which can be had by sending AI robots to mine for us, powered by ceramic batteries and shipping upwards using liquid N<sub>2</sub> cooled “high temp” superconductors<sup>208</sup> and electromagnetics, all powered by energy harvested from space,<sup>209</sup> and distributed through the Earth as one giant conductive wireless system.<sup>210 211 212</sup>

For now, a few people will have to be content knowing how the interaction of Heaven and Earth truly is, and behaves.

*“Is not the space between Heaven and Earth like a bellows? It is empty, but lacks nothing. The more it moves, the more comes out of it.”*

*“The reason why heaven and earth are able to endure and continue thus long is because they do not live of, or for, themselves.”*

*“Man is ruled by Earth. Earth is ruled by Heaven. Heaven is ruled by the Way. The Way is ruled by itself.”* ~Laozi<sup>213</sup>



<sup>208</sup> [https://en.wikipedia.org/wiki/Yttrium\\_barium\\_copper\\_oxide](https://en.wikipedia.org/wiki/Yttrium_barium_copper_oxide)

<sup>209</sup> The author postulates a method of sending signals to Structured Atoms, changing their “quantum entanglement” like turning on and off sivs of charge, and sending Birkeland pipes of plasma spiraling to a moon base where it can be harvested and transformed safely back to the Earth.

<sup>210</sup> “My Inventions,” Tesla, 1919, [http://www.tfcbooks.com/e-books/my\\_inventions.pdf](http://www.tfcbooks.com/e-books/my_inventions.pdf)

<sup>211</sup> <http://www.ijssret.org/pdf/122063.pdf>

<sup>212</sup> <https://ieeexplore.ieee.org/document/7873564/>

<sup>213</sup> Daodejing, verses 5, 7, and 25 respectively

## Appendix A - Glossary of Terms<sup>214</sup>

**Active Galactic Nuclei** - An active galactic nucleus (AGN) is a compact region at the center of a galaxy that has a much higher than normal luminosity over at least some portion—and possibly all—of the electromagnetic spectrum, with characteristics indicating that the excess luminosity is not produced by stars.

**Aether/Ether** - a very rarefied and highly elastic substance formerly believed to permeate all space, including the interstices between the particles of matter, and to be the medium whose vibrations constituted light and other electromagnetic radiation.

**Alfvénic Magnetism** - In magnetohydrodynamics, the Alfvén's theorem, also known as Alfvén's frozen in theorem, states that in a fluid with infinite electric conductivity, magnetic field lines are frozen into the fluid and have to move along with it.

**Amplitude** - the maximum extent of a vibration or oscillation, measured from the position of equilibrium.

**Angular Momentum** - the quantity of rotation of a body, which is the product of its moment of inertia and its angular velocity.

**Anode** - the positively charged electrode by which the electrons leave a device or the negatively charged electrode of a device supplying current such as a primary cell.

**Anticyclone** - a weather system with high atmospheric pressure at its center, around which air slowly circulates in a clockwise (northern hemisphere) or counterclockwise (southern hemisphere) direction.

**Antimatter** - “molecules formed by atoms consisting of antiprotons, antineutrons, and positrons. Stable antimatter does not appear to exist in our universe.”

**Birkeland Current** - A Birkeland current is a set of currents that flow along geomagnetic field lines connecting the Earth's magnetosphere to the Earth's high latitude ionosphere. The strength of the Birkeland currents changes with activity in the magnetosphere (e.g. during substorms).

**c** - The speed of light in vacuum, commonly denoted c, is a universal physical constant important in many areas of physics. Its exact value is 299,792,458 metres per second.

**Capacitance** - the ability of a system to store an electric charge. The ratio of the change in an electric charge in a system to the corresponding change in its electric potential. The SI unit of capacitance is the farad (symbol: F), named after the English physicist Michael Faraday. A 1 farad capacitor, when charged with 1 coulomb of electrical charge, has a potential difference of 1 volt between its plates. symbol: C

**Cathode** - the negatively charged electrode by which electrons enter an electrical device or the positively charged electrode of an electrical device, such as a primary cell, that supplies current.

**Charge** - Electric charge is the physical property of matter that causes it to experience a force when placed in an electromagnetic field. There are two types of electric charges; positive and negative (commonly carried by protons and electrons respectively). Like charges repel and unlike attract. SI unit: Coulomb. symbol: Q

**Charge Density** - the electric charge per unit area of a surface, or per unit volume of a field or body.

**Coaxial** - having a common axis. (of a cable or line) consisting of two concentric conductors separated by an insulator.

**Conductivity**

**Electrical:** the degree to which a specified material conducts electricity, calculated as the ratio of the current density in the material to the electric field that causes the flow of current. It is the reciprocal of the resistivity.

**Thermal:** the rate at which heat passes through a specified material, expressed as the amount of heat that flows per unit time through a unit area with a temperature gradient of one degree per unit distance.

---

<sup>214</sup> Sources: Google and Wikipedia, unless otherwise noted.

**Convection** - the movement caused within a fluid by the tendency of hotter and therefore less dense material to rise, and colder, denser material to sink under the influence of gravity, which consequently results in transfer of heat.

**Coriolis Effect** - an effect whereby a mass moving in a rotating system experiences a force (the *Coriolis force*)<sup>215</sup> acting perpendicular to the direction of motion and to the axis of rotation. On the earth, the effect tends to deflect moving objects to the right in the northern hemisphere and to the left in the southern and is important in the formation of cyclonic weather systems.

**Counter-rotation/rotating** - (of two corresponding or similar moving parts) rotating in opposite directions.

**Curvature** - the degree to which a curve deviates from a straight line, or a curved surface deviates from a plane.

**Cyclone** - a system of winds rotating inward to an area of low atmospheric pressure, with a counterclockwise (northern hemisphere) or clockwise (southern hemisphere) circulation; a depression.

**Dark Energy** - a theoretical hypothetical repulsive force that counteracts gravity and causes the universe to expand at an accelerating rate.

**Dark Matter** - (in some cosmological theories) non-luminous material that is postulated to exist in space and that could take any of several forms including weakly interacting particles (*cold dark matter*) or high-energy randomly moving particles created soon after the Big Bang (*hot dark matter*).

**Diamagnetic** - (of a substance or body) tending to become magnetized in a direction at 180° to the applied magnetic field.

**Dielectric/Effect** - the energy storing capacity of the material (by means of polarization). A common example of a dielectric is the electrically insulating material between the metallic plates of a capacitor.

**Diffusion** - the intermingling of substances by the natural movement of their particles: "the rate of diffusion of a gas"

**Dwarf Star** - a star of relatively small size and low luminosity, including the majority of main sequence stars.

**e (Euler's Number)** - The number e is a famous irrational number, and is one of the most important numbers in mathematics. The first few digits are: 2.7182818; The natural log of e is 1.  $\ln(e)=1$

**Earthspot** - The hypothetical<sup>216</sup> junction of low pressure zones changing temperatures, with electromagnetic tunnels observed in correlation with sunspot+solar flare activity, or coronal hole activity, depending on charge.

**Eigenvector** - a vector that when operated on by a given operator gives a scalar multiple of itself.

**Electric/current sheet** - A current sheet is an electric current that is confined to a surface, rather than being spread through a volume of space.<sup>217</sup>

**Electrical Circuit** - a path in which electrons from a voltage or current source flow. The point where those electrons enter an electrical circuit is called the "source" of electrons. The point where the electrons leave an electrical circuit is called the "return" or "earth ground".

**Electrical Tension** - Voltage, electric potential difference, electric pressure or electric tension (formally denoted  $\Delta V$  or  $\Delta U$ , but more often simply as **V** or **U**, for instance in the context of Ohm's or Kirchhoff's circuit laws; see Appendix B.IV) is the difference in electric potential between two points.

**Electric Field** - a region around a charged particle or object within which a force would be exerted on other charged particles or objects. The SI unit of electric field strength is **newtons per coulomb** (N/C) or volts per **meter**(V/m). The force experienced by a very small test charge q placed in a field E in a vacuum is given by  $E = F/q$ , where F is the force experienced. Symbol: **E**

**Electrogravity** - a research subject based upon the original work of Nikola Tesla, and hypotheses advanced by Thomas T. Brown and Brown's subsequent extensive experimentation and demonstrations of the effect.

<sup>215</sup> Please note this is not a real force, and this is not a correct theorem, but is included for thoroughness. See Birkeland, Bagashov

<sup>216</sup> Sf. Careaga, see "Weatherman's Guide to the Sun," B Davidson, 2017

<sup>217</sup> <https://phys.org/news/2012-08-thin-current-sheets-space-action.html>

**Electromagnetic Force** - (EMF) A fundamental force in nature, the electromagnetic force acts between charged particles and is the combination of all electrical and magnetic forces. The electromagnetic force can be attractive or repulsive.

**Electronegativity** - a measure of how strongly atoms attract bonding electrons to themselves

**Electrotropism** - a kind of tropism which results in growth or migration of an organism, usually a cell, in response to an exogenous electric field.

**Electroquake** - Earthquakes induced by the plasma-electromagnetic sky, especially solar coronal holes.<sup>218</sup>

**Electroweak Force** - relating to or denoting electromagnetic and weak interactions regarded as manifestations of the same interaction.

**Energy** - power derived from the utilization of physical or chemical resources, especially to provide light and heat or to work machines.

**Euler's Formula** (see right)

$$e^{ix} = \cos x + i \sin x$$

**Evolutionary Theory** - The theory of evolution by natural selection, first formulated in Darwin's book "On the Origin of Species" in 1859, is the process by which organisms change over time as a result of changes in heritable physical or behavioral traits.

$$x \rightarrow x \ln b$$

$$\begin{aligned} e^{i(x \ln b)} &= \cos(x \ln b) + i \sin(x \ln b) \\ &= b^{ix} \end{aligned}$$

**Extrapolation** - the action of estimating or concluding something by assuming that existing trends will continue or a current method will remain applicable. In mathematics: the extension of a graph, curve, or range of values by inferring unknown values from trends in the known data.

**Extrinsic** - not part of the essential nature of someone or something; coming or operating from outside.

**EZ Water** - H<sub>3</sub>O<sub>2</sub> is more viscous, more ordered, and more alkaline than regular water (H<sub>2</sub>O), and its optical properties are different. The refractive index of EZ water is about 10% higher than ordinary water.<sup>219</sup> (see: Structured Water)

**Flux** - In electromagnetism, electric flux is the measure of flow of the electric field through a given area

**Force** - strength or energy as an attribute of physical action or movement; something that causes a change in the motion of an object. F=ma (SI unit is N for Newtons)

**Fractals** - a curve or geometric figure, each part of which has the same statistical character as the whole. Fractals are useful in modeling structures (such as eroded coastlines or snowflakes) in which similar patterns recur at progressively smaller scales, and in describing partly random or chaotic phenomena such as crystal growth, fluid turbulence, and galaxy formation.

**Frequency** - the rate at which a vibration occurs that constitutes a wave, either in a material (as in sound waves), or in an electromagnetic field (as in radio waves and light), usually measured per second.

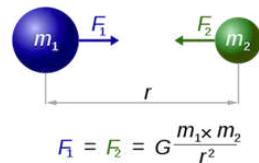
**Friction** - the resistance that one surface or object encounters when moving over another.

**Gaia Hypothesis** - the theory, put forward by James Lovelock, that living matter on the earth collectively defines and regulates the material conditions necessary for the continuance of life. The planet, or rather the biosphere, is thus likened to a vast self-regulating organism.

**Galactic Electric Circuit** - the electric circuit composed of or pertaining to the galactic scales: clusters, globulars, nebulae, dwarf and galactic superstructures.<sup>220</sup>

**Gaussian** - being or having the shape of a normal curve or a *normal distribution*.

**Gravity** - the force that attracts a body toward the center of the earth, or toward any other physical body having mass. For most purposes Newton's laws of gravity apply, with minor modifications to take the general theory of relativity into account. (see figure at right)



$$F_1 = F_2 = G \frac{m_1 \times m_2}{r^2}$$

<sup>218</sup> Sf. Careaga

<sup>219</sup> [www.pollacklab.com](http://www.pollacklab.com)

<sup>220</sup> Sf. Careaga

**Gravity Waves** - a wave propagated on a liquid surface or in a fluid (Aether) through the effects of gravity.<sup>221</sup>

**h (Planck's Constant)** - the unvarying ratio of the energy of a quantum of radiation to its frequency and that has an approximate value of  $6.626 \times 10^{-34}$  joule-second.

**Heavy Water** - water in which the hydrogen in the molecules is partly or wholly replaced by the isotope deuterium [ a hydrogen isotope], used especially as a moderator in nuclear reactors.

**Heisenberg Uncertainty Principle** - The statement in quantum mechanics, formulated by Werner Heisenberg, that it is impossible to measure two properties of a quantum object, such as its position and momentum (or energy and time), simultaneously with infinite precision.

**Hysteresis** (magnetic) - the dependence of the state of a system on its history.

**Ideal Gas** - a hypothetical gas whose molecules occupy negligible space and have no interactions, and that consequently obeys the gas laws exactly.

**Imaginary Number (i)** - An imaginary number is a complex number that can be written as a real number multiplied by the imaginary unit i, which is defined by its property  $i^2 = -1$

**Inductance** - the property of an electric conductor or circuit that causes an electromotive force to be generated by a change in the current flowing. (symbol: L; Reduced to base SI units, one henry (H) is the equivalent of one kilogram meter squared per second squared per ampere squared ( $\text{kg m}^2 \text{s}^{-2} \text{A}^{-2}$ ))

**Inertia** - a property of matter by which it continues in its existing state of rest or uniform motion in a straight line, unless that state is changed by an external force.

**Instant Petrification** - rapid organic mineralization via electrolytic ion diffusion in high energy arc discharge<sup>222</sup>

**Intrinsic** - belonging naturally; essential.

**Intrinsic Redshift** - Intrinsic redshift specifically refers to variations in the observed redshift of individual objects (galaxies, quasars ...) that vary from object to object such that two objects at the same distance might have vastly different redshifts.

**Ions/Ionized** - an atom or molecule with a net electric charge due to the loss or gain of one or more electrons.

**Langmuir Probe** - a device used to determine the electron temperature, electron density, and electric potential of a plasma. It works by inserting one or more electrodes into a plasma, with a constant or time-varying electric potential between the various electrodes or between them and the surrounding vessel.

**Langmuir Waves** - Plasma oscillations, also known as Langmuir waves (after Irving Langmuir), are rapid oscillations of the electron density in conducting media such as plasmas or metals in the ultraviolet region. They are parallel in form to *Jeans instability waves*, which are caused by gravitational instabilities in a static medium.

**Laplace Transformation** - an integral transform named after its discoverer

Pierre-Simon Laplace (/lə'plā:s/). It takes a function of a real variable t (time) to a function of a complex variable s (frequency). (see right)

**Lattice** - a regular repeated three-dimensional arrangement of atoms, ions, or molecules in a metal or other crystalline solid.

**Lightyear** - a unit of astronomical distance equivalent to the distance that light travels in one year, which is  $9.4607 \times 10^{12}$  km (nearly 6 trillion miles).

**Liquid Metallic Hydrogen** - Metallic hydrogen is a phase of hydrogen in which it behaves like an electrical conductor.

**Lorentzian** - the set of equations that, in Einstein's special theory of relativity, relate the space and time coordinates of one frame of reference to those of another.

**Magnetar** - a "neutron" star with an extremely strong magnetic field.

$$\begin{aligned}\mathcal{L}\{\sin(at)\} &= F(s) \\ &= \int_0^\infty e^{-st} \sin(at) dt \\ &= \lim_{n \rightarrow \infty} \int_0^n e^{-st} \sin(at) dt\end{aligned}$$

<sup>221</sup> In Einstein's theory of General Relativity, this fluid medium is space-time. In electromagnetic cosmologies, it is the EMF force field itself.

<sup>222</sup> Sf. Careaga; see: P. Mupp, "Ancient Destructions."

**Magnetic Field** - a region around a magnetic material or a moving electric charge within which the force of magnetism acts. SI Unit: Gauss. Symbol: **B**

**Magnetic Flux** - In electromagnetism, the magnetic flux(often denoted  $\Phi$  or  $\Phi_B$ ) through a surface is the surface integral of the normal component of the magnetic field **B** passing through that surface. The SI unit of magnetic flux is the weber (**Wb**) (in derived units: volt seconds), and the CGS unit is the maxwell.

**Magnetic Reconnection** - is a physical process in highly conducting plasmas in which the magnetic topology is rearranged and magnetic energy is converted to kinetic energy, thermal energy, and particle acceleration.

**Magnetic Flux Ropes** - Magnetic flux ropes are twisted bundles of electrical current and magnetic field which can exist in magnetized plasmas<sup>223</sup>

**Magnetosphere** - the region surrounding the earth or another astronomical body in which its magnetic field is the predominant effective magnetic field.

**Marklund Convection** - named after Göran Marklund, is a convection process that takes place in filamentary currents of plasma. It occurs within a plasma with an associated electric field, that causes convection of ions and electrons inward towards a central twisting filamentary axis.

**Mass** - the property of matter that measures its resistance to acceleration. Roughly, the mass of an object is a measure of the number of atoms in it. The basic unit of measurement for mass is the kilogram (**kg**). (See Newton's laws of motion; compare weight, inertia.)

**Membrane** - a pliable sheetlike structure acting as a boundary, lining, or partition of various kinds.

**Modulation** - the process of varying one or more properties of a periodic waveform, called the carrier signal, with a signal that typically contains information to be transmitted.

**Momentum** - the quantity of motion of a moving body, measured as a product of its mass and velocity.  $P=mv$

**MOND** - a class of theories known as modified gravity, and is an alternative to the hypothesis that the dynamics of galaxies are determined by massive, invisible dark matter halos.

**Nebulae** - a cloud of gas and dust in outer space, visible in the night sky either as an indistinct bright patch or as a dark silhouette against other luminous matter.

**Neutron Star** - a [hypothetical] celestial object of very small radius and very high density, composed predominantly of closely packed neutrons.<sup>224</sup>

**Nonlinear** - In mathematics and physical sciences, a nonlinear system is a system in which the change of the output is not proportional to the change of the input.

**Nova/Supernova** - a star showing a sudden large increase in brightness and then slowly returning to its original state over a few months.

**Ozone Layer** - a layer in the earth's stratosphere at an altitude of about 6.2 miles (10 km) containing a high concentration of ozone, which absorbs most of the ultraviolet radiation reaching the earth from the sun.

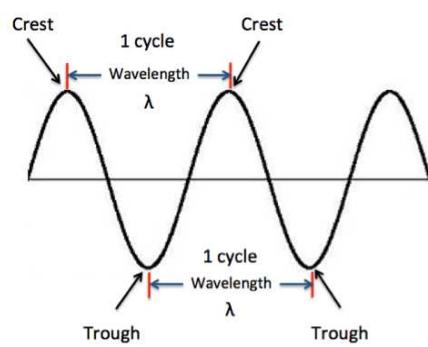
**P-wave** - a longitudinal earthquake wave that travels through the interior of the earth and is usually the first conspicuous wave to be recorded by a seismograph. Expand. Also called primary wave.

**Penumbra** (of the sun) - the less dark outer part of a sunspot, surrounding the dark core.

**Period** - A Time period (denoted by '**T**' ) is the time needed for one complete cycle of vibration to pass in a given point. As the frequency of a wave increases, the time period of the wave decreases.

**Permittivity** - the ability of a substance to store electrical energy in an electric field. Symbols:  $K$ ,  $\epsilon$ ,  $\epsilon'$  or  $\epsilon$

**Pinch** - A pinch is the compression of an electrically conducting filament by magnetic forces.



Crest, Trough and Wavelength

<sup>223</sup> <http://iopscience.iop.org/article/10.1088/0741-3335/56/6/064002> ; see: Birkeland Currents

<sup>224</sup> Without any other mechanism of explanation, gravity is expected to be capable of doing this; however, high rotation rates proposed preclude this possibility.

**Phi** - The Golden ratio  $\phi$  is a special number (1.6180339887) found by dividing a line into two parts so that the longer part divided by the smaller part is also equal to the whole length divided by the longer part.

**Photoelectric Effect** - the emission of electrons or other free carriers when light shines on a material.

Electrons emitted in this manner can be called photo electrons. This phenomenon is commonly studied in electronic physics, as well as in fields of chemistry, such as quantum chemistry or electrochemistry.

**Photovoltaic Effect** - the creation of voltage and electric current in a material upon exposure to light and is a physical and chemical property/phenomenon. The photovoltaic effect is closely related to the photoelectric effect.

**Photon** - a particle representing a quantum of light or other electromagnetic radiation. A photon carries energy proportional to the radiation frequency but has zero rest mass.

**Planck Distance/Length** - The Planck length is the scale at which classical ideas about gravity and space-time cease to be valid, and quantum effects dominate. This is the quantum of length, the smallest measurement of length with any meaning. And roughly equal to  $1.6 \times 10^{-35}$  m or about  $10^{-20}$  times the size of a proton.

**Plasma** - an ionized gas consisting of positive ions and free electrons in proportions resulting in more or less no overall electric charge, typically at low pressures (as in the upper atmosphere and in fluorescent lamps) or at very high temperatures (as in stars and nuclear fusion reactors).

**Plasma Sheath (aka Double Layer)** - The *Debye sheath* (electrostatic sheath) is a layer in a plasma which has a greater density of positive ions, and hence an overall excess positive charge, that balances an opposite negative charge on the surface of a material with which it is in contact. See: Langmuir, Tonks, Bohm<sup>225</sup>

**Platonic Solids** - one of five regular solids (a tetrahedron, cube, octahedron, dodecahedron, or icosahedron).

**Plumes** - A mantle plume is an upwelling of abnormally hot rock within the Earth's mantle. As the heads of mantle plumes can partly melt when they reach shallow depths, they are thought to be the cause of volcanic centers known as hotspots and probably also to have caused flood basalts.

**Polarized** - restrict the vibrations of (a transverse wave, especially light) wholly or partially to one direction.

**Power** - the rate of doing work, the amount of energy transferred per unit time. In the International System of Units, the unit of power is the joule per second (**J/s**), known as the watt (**W**) in honour of James Watt, the eighteenth-century developer of the steam engine condenser.

**Pulsar** - a celestial object that emits regular pulses of radio waves and other electromagnetic radiation at rates of up to sixteen thousand pulses per second.

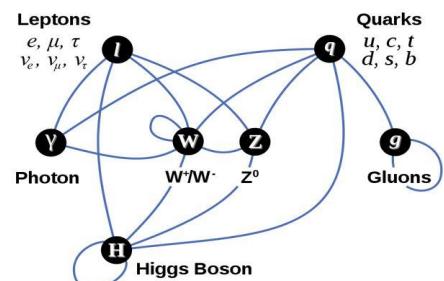
**Quanta** - a discrete quantity of energy proportional in magnitude to the frequency of the radiation it represents.

**Quarks** - any of a number of subatomic particles carrying a fractional electric charge, postulated as building blocks of the hadrons. Quarks have not been directly observed, but theoretical predictions based on their existence have been confirmed experimentally. (See right)

**Quasar** - a massive and extremely remote celestial object, emitting exceptionally large amounts of energy, and typically having a starlike image in a telescope.

**Radiation** - the emission of energy as electromagnetic waves or as moving subatomic particles, especially high-energy particles that cause ionization.

**Radio Jets** - An astrophysical jet is an astronomical phenomenon where outflows of ionised matter are emitted as an extended beam along the axis of rotation. When this greatly accelerated matter in the beam approaches the speed of light, astrophysical jets become *relativistic jets* as they show effects from special relativity (see: Relativity Theory).



<sup>225</sup> <http://iopscience.iop.org/article/10.1088/0963-0252/18/1/014004>

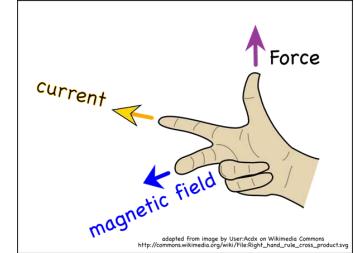
**Ray Tube** - The cathode ray tube (CRT) is a vacuum tube that contains one or more electron guns and a phosphorescent screen, and is used to display images. It modulates, accelerates, and deflects electron beam(s) onto the screen to create the images.

**Redshift** - the displacement of spectral lines toward longer wavelengths (the red end of the spectrum) in radiation from distant galaxies and celestial objects. This is interpreted as a Doppler shift that is proportional to the velocity of recession and thus to distance.

**Relativity Theory** - a theory hypothesis, formulated essentially by Albert Einstein, that all motion must be defined relative to a frame of reference and that space and time are relative, rather than absolute concepts.

**Resistivity** - a measure of the resisting power of a specified material to the flow of an electric current.  $R = V/I$  (see: Ohm's Law, Appendix B.IV.9)

**Right-hand Rule** - uses the shape the right hand to establish the standard orientation of vector quantities normal to a plane, especially when calculating a vector product or the helicity of particle spin. (see right)



**Rossby Waves** - also known as planetary waves, are a natural phenomenon in the atmosphere and oceans of planets that largely owe their properties to rotation. Rossby waves are a subset of inertial waves. Atmospheric Rossby waves on Earth are giant meanders in high-altitude winds that have a major influence on weather.

**Schrodinger's Cat Phenomenon** - a cat imagined as being enclosed in a box with a radioactive source and a poison that will be released when the source (unpredictably) emits radiation, the cat being considered (according to quantum mechanics) to be simultaneously both dead and alive until the box is opened and the cat observed.

**Schumann Resonances** - a set of spectrum peaks in the extremely low frequency (ELF) portion of the Earth's electromagnetic field spectrum. Schumann resonances are global electromagnetic resonances, generated and excited by lightning discharges in the cavity formed by the Earth's surface and the ionosphere.

**Solar System Circuit** - the electric circuit composed of or pertaining to the solar system scales: the sun, planets, moons, comets, asteroids, and rogue objects, as well as the stellar sheath and boundary region.<sup>226</sup>

**Solar Wind** - the continuous flow of charged particles from the sun that permeates the solar system.

**Space-time** - the concepts of time and three-dimensional space regarded as fused in a four-dimensional continuum.

**Space-time dilation** - the stretching of space-time of a moving object relative to a second stationary observer or to differently moving objects in different reference frames.<sup>227</sup> (see right for time-dilation equation of Special Relativity)

**Starwater** - a multi-episode literature review of water in the universe, where it comes from, why earth has so much water, and the latest discoveries; water made from solar wind interaction with the Ozone Layer.<sup>228</sup>

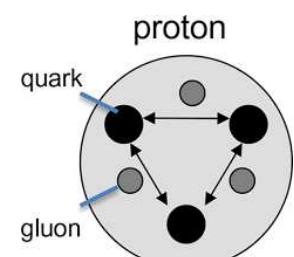
**String Theory** - (aka M Theory) a cosmological theory hypothesis based on the existence of cosmic strings in an 11-dimensional (hypothetical) space-time. See: Supersymmetry

**Strong Force** - the force that holds particles together in the atomic nucleus and the force that holds quarks together in elementary particles. Note: As the name implies, this is the strongest force known in nature. (see right)

**Structured Atom** - an atomic theory based upon Platonic solids, electrons, and protons alone; comprising solely of electromagnetic forces (ie; eliminating the strong force)<sup>229</sup>

$$t' = t\sqrt{1 - V^2 / c^2}$$

Where:  $t'$  = dilated time  
 $t$  = stationary time  
 $V$  = velocity  
 $c$  = speed of light



<sup>226</sup> Sf. Careaga

<sup>227</sup> Sf. Careaga; <http://www.emc2-explained.info/Time-Dilation/#.Wvopx0gvzrc>

<sup>228</sup> <https://www.suspiciousobservers.org/starwater/>

<sup>229</sup> <https://ethereal-matters.org/sam>

**Structured Water** - a molecular arrangement of water molecules that exists when water is near hydrophilic surfaces. Also exhibiting special electrical properties.<sup>230</sup> (see EZ Water)

**Sunspot** - a spot or patch appearing from time to time on the sun's surface, appearing dark by contrast with its surroundings.

**Supersymmetry** - a very general type of mathematical symmetry that relates fermions and bosons.

**Surface tension** - the tension of the surface film of a liquid caused by the attraction of the particles in the surface layer by the bulk of the liquid, which tends to minimize surface area.

**Tau** - An arc of a circle with the same length as the radius of that circle subtends an angle of 1 radian. The circumference subtends an angle of  $2\pi$  radians.<sup>231</sup> Symbol:  $\tau$

**Terrella** - a small magnetised model ball representing the Earth, that is thought to have been invented by the English physician William Gilbert while investigating magnetism, and further developed 300 years later by the Norwegian scientist and explorer Kristian Birkeland.

**Thermodynamics** - the branch of physical science that deals with the relations between heat and other forms of energy (such as mechanical, electrical, or chemical energy), and, by extension, of the relationships between all forms of energy.

**Tropism** - the turning of all or part of an organism in a particular direction in response to an external stimulus.

**Tufting** - (aka solar granules) when the [solar surface (heliopause)] current density is too high for the anode surface to accommodate, a bright secondary plasma forms within the primary plasma.<sup>232</sup>

**Unified Field** - a type of field theory that allows all that is usually thought of as fundamental forces and elementary particles to be written in terms of a pair of physical and virtual fields.

**Vacuum Tube/Crookes Tube** - an electron tube containing a near-vacuum that allows the free passage of electric current.

**Van Der Waals Forces** - weak, short-range electrostatic attractive forces between uncharged molecules, arising from the interaction of permanent or transient electric dipole moments.

**Viscosity** - the state of being thick, sticky, and semifluid in consistency, due to internal friction or a quantity expressing the magnitude of internal friction, as measured by the force per unit area resisting a flow in which parallel layers unit distance apart have unit speed relative to one another.

**Vortex** - a mass of whirling fluid or air, especially a whirlpool or whirlwind.

**Vortrix Algebra** - Vortex-matrix Algebra; a subset of linear algebra that postulates the cross product of two vectors is a matrix rather than an orthogonal vector.<sup>233</sup>

**Wave-particle Duality** - is the concept in quantum mechanics that every particle or quantic entity may be partly described in terms not only of particles, but also of waves. It expresses the inability of the classical concepts "particle" or "wave" to fully describe the behavior of quantum-scale objects.

**Waves** - a wave is a disturbance that transfers energy through matter or space, with little or no associated mass transport. Electromagnetic waves do not require a medium.<sup>234</sup>

**Weak Force** - the weak interaction (the weak force or weak nuclear force) is the mechanism of interaction between subatomic particles that causes radioactive decay and thus plays an essential role in nuclear fission.

**Work** - measure of energy transfer that occurs when an object is moved over a distance by an external force at least part of which is applied in the direction of the displacement.

**Z Pinch/ Bennett Pinch** - also known as a zeta pinch, is a type of plasma confinement system that uses an electrical current in the plasma to generate a magnetic field that compresses it; see: Pinch.

---

<sup>230</sup> <http://article.sciencepublishinggroup.com/pdf/10.11648.j.wjap.20180301.12.pdf>

<sup>231</sup> <https://tauday.com/>

<sup>232</sup> <https://www.everythingselectric.com/electric-sun/>

<sup>233</sup> Sf. Careaga; see "Votrix Algebra," R. Distinty, 2018

<sup>234</sup> A strong hint that they are the medium.

## Appendix B - Known Physical Laws of the Universe

### I - The Laws of Energy<sup>235</sup>

The laws of energy encompass general statements of known facts about energy, as accords with studies of the 8 major laws of the Universe: Causality, Evolution/Flux, Relativity, Conservation, Vibration, Rotation, Polarity, and Resonance. To be one of the laws of energy, the axiom must comply with all 8 laws simultaneously (albeit it may appear in different form or applicability), as well as unify the laws, especially their compliments.

1. Energy is abundant; however it prefers wells (sinks) of lowest states of equilibrium.
2. Energy tends to flow along lines of least resistance and highest conductivity; but not always.<sup>236</sup>
3. Energy is produced via differential gradients inducing tension between polarities.
4. Energy is relatively difficult to attain freely.
5. Entropy is balanced with Order, but the ratio between them will affect overall relative appearance of abundance or scarcity of energy.
6. Energy left alone tends to dissipate rather than condensate.
7. Forces bind energy into concentrations and potential reservoirs.
8. Energy may freely transform along prescribed mechanisms and principle controlled means, through forces and fields (force and non-force).
9. Energy conforms to thermodynamic principles in the main, except during reversion or abnormal (forced) circumstances, where it may flow along balancing lines.
10. Energy is neither permanently consumed nor permanently destroyed, it merely transforms, even into quiescent/etheric states which are not directly measured.
11. Energy is.
  - a. The forms of Energy are infinite.
  - b. The time of Energy is eternal.

### II - The Laws of Thermodynamics

1. Zeroth law of thermodynamics – If two thermodynamic systems are each in thermal equilibrium with a third, then they are in thermal equilibrium with each other.
2. First law of thermodynamics – Energy can neither be created nor destroyed. It can only change forms. In any process, the total energy of the universe remains the same. For a thermodynamic cycle the net heat supplied to the system equals the net work done by the system.
3. Second law of thermodynamics – The entropy of an isolated system not in equilibrium will tend to increase over time, approaching a maximum value at equilibrium.
4. Third law of thermodynamics – As temperature approaches absolute zero, the entropy of a system approaches a constant minimum.<sup>237</sup>
5. Fourth law of thermodynamics - Intensive properties are independent of the mass of the system; Extensive properties depend on the mass of the system<sup>238</sup>; all equations must balance intensive and extensive properties.<sup>239</sup>

<sup>235</sup> By Sf. Ramon Careaga, BSEE, MSTOM

<sup>236</sup> One of the most paradoxical facts regarding the Way/Dao of Energy is this “balancing” clause.

<sup>237</sup> <http://physicsforidiots.com/physics/thermodynamics/>

<sup>238</sup> P.T. Landsberg, Thermodynamics with Quantum Statistical Illustrations, Interscience Publishers, New York, 1961, p. 142

<sup>239</sup> <https://www.youtube.com/watch?v=t8Nm9bnWOTs>

6. Planck's Law - The spectral radiance of a body for frequency  $\nu$  at absolute temperature  $T$  is given by

$$B_\nu(T) = \frac{2\hbar\nu^3}{c^2} \frac{1}{e^{\frac{\hbar\nu}{kT}} - 1} \text{ where } k = \text{Boltzmann's constant}$$

$$= 1.38 \times 10^{-23} \text{ Joules /}^\circ\text{K}$$

240 241

7. Boyle's Law - The absolute pressure exerted by a given mass of an ideal gas is inversely proportional to the volume it occupies if the temperature and amount of gas remain unchanged within a closed system<sup>242</sup>
8. Ideal Gas Law - The ideal gas law is the equation of state for an ideal gas, given by:  $PV=nRT$  where
- $P$  is the pressure
  - $V$  is the volume
  - $n$  is the amount of substance of the gas (in moles)
  - $R$  is the gas constant ( $8.314 \text{ J}\cdot\text{K}^{-1}\cdot\text{mol}^{-1}$ )
  - $T$  is the absolute temperature<sup>243</sup>
9. Joule's Gas Law - The internal energy of a fixed mass of an ideal gas depends only on its temperature (not pressure or volume).<sup>244</sup>

### III - The Laws of Motion and Gravity

1. Newton's First Law - In an inertial frame of reference, an object either remains at rest or continues to move at a constant velocity, unless acted upon by a force.
2. Newton's Second Law - In an inertial reference frame, the vector sum of the forces  $\mathbf{F}$  on an object is equal to the mass  $m$  of that object multiplied by the acceleration  $\mathbf{a}$  of the object:  $\mathbf{F} = m\mathbf{a}$ . (It is assumed here that the mass  $m$  is constant.)
3. Newton's Third Law - When one body exerts a force on a second body, the second body simultaneously exerts a force equal in magnitude and opposite in direction on the first body.<sup>245</sup>
4. Newton's Law of Gravitation - In non quantum, non-relativistic space,

$$F_g = G \frac{m_1 m_2}{r^2}$$

5. Einstein's General Relativity derivation - In relativistic space,<sup>246 247</sup>

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi G}{c^4} T_{\mu\nu}$$

6. Euler's First Law - The linear momentum of a body,  $\mathbf{p}$  (also denoted  $\mathbf{G}$ ) is equal to the product of the mass of the body  $m$  and the velocity of its center of mass

7. Euler's Second Law - The rate of change of angular momentum  $\mathbf{L}$  (sometimes denoted  $\mathbf{H}$ ) about a point that is fixed in an inertial reference frame (often the mass center of the body), is equal to the sum of the external moments of force (torques) acting on that body  $\mathbf{M}$  (also denoted  $\mathbf{T}$  or  $\Gamma$ ) about that point.<sup>248</sup>

<sup>240</sup> <https://www.physicsforums.com/threads/plancks-law-wavelength-frequency-angle.788629/>

<sup>241</sup>  $h = \text{Planck's constant}, 6.626070040(81) \times 10^{-34} \text{ J s}$  or  $4.135667662(25) \times 10^{-15} \text{ eV s}$ ; such that  $E = hf$

<sup>242</sup> [https://en.wikipedia.org/wiki/Boyle%27s\\_law](https://en.wikipedia.org/wiki/Boyle%27s_law)

<sup>243</sup> [https://en.wikipedia.org/wiki/Ideal\\_gas#Ideal\\_gas\\_law](https://en.wikipedia.org/wiki/Ideal_gas#Ideal_gas_law)

<sup>244</sup> [https://en.wikipedia.org/wiki/Joule%20%93Thomson\\_effect#Joule's\\_second\\_law](https://en.wikipedia.org/wiki/Joule%20%93Thomson_effect#Joule's_second_law)

<sup>245</sup> [https://en.wikipedia.org/wiki/Newton%27s\\_laws\\_of\\_motion](https://en.wikipedia.org/wiki/Newton%27s_laws_of_motion)

<sup>246</sup> Gravity is not a factor in quantum scales as it is far too weak to be measured and is generally regarded as basically 0.

<sup>247</sup> Tensors notwithstanding, this law of gravitation will stand until overthrown with something better.

<sup>248</sup> [https://en.wikipedia.org/wiki/Euler%27s\\_laws\\_of\\_motion](https://en.wikipedia.org/wiki/Euler%27s_laws_of_motion)

## IV - The Laws of Electromagnetism

1. Gauss' Law - The electric flux leaving a volume is proportional to the charge **Q** inside.
2. Gauss' Law of Magnetism - There are no magnetic monopoles; the total magnetic flux through a closed surface is zero.
3. Faraday's Law of Induction - The voltage induced in a closed loop is proportional to the rate of change of the magnetic flux that the loop encloses.<sup>249</sup>
4. Ampere's Circuit Law - The magnetic field induced around a closed loop is proportional to the electric current plus displacement current (rate of change of electric field) that the loop encloses.<sup>250</sup>
5. Lorentz Force Law - the combination of electric and magnetic force on a point charge due to electromagnetic fields. A particle of charge  $q$  moving with velocity  $\mathbf{v}$  in the presence of an electric field  $\mathbf{E}$  and a magnetic field  $\mathbf{B}$  experiences a force:  
$$\vec{F} = q\vec{E} + q\vec{v} \times \vec{B}$$

Electric force      Magnetic force
6. Lenz's Law - the direction of current induced in a conductor by a changing magnetic field due to induction is such that it creates a magnetic field that opposes the change that produced it.<sup>251</sup>
7. Kirchoff's First Law of Currents - At any node (junction) in an electrical circuit, the sum of currents flowing into that node is equal to the sum of currents flowing out of that node or the algebraic sum of currents in a network of conductors meeting at a point is zero.
8. Kirchoff's Second Law of Voltages - The directed sum of the electrical potential differences (voltage) around any closed network is zero, or The algebraic sum of the products of the resistances of the conductors and the currents in them in a closed loop is equal to the total emf available in that loop.<sup>252</sup>
9. Ohm's Law - Resistance is defined by the ratio of electrical tension to electrical current;  $V = I \cdot R$ <sup>253</sup>
10. Ampere's Law with Maxwell's Addition - magnetic fields can be generated in two ways: by electric current and by changing electric fields.<sup>254</sup>
11. Steinmetz's Law - Hysteresis, lagging of the magnetization of a ferromagnetic material, such as iron, behind variations of the magnetizing field.<sup>255</sup>

## V - The Laws of Life<sup>256</sup>

1. The life-force (Qi)<sup>257</sup> is mysteriously abundant, but conforms otherwise to the above listed laws.
2. Life orders structure and material, and acts contrariwise to Entropy.
3. All objects follow the pattern: conception, birth, growth, steady state/stagnation, decrease, death, decay, conversion, transformation, re-emergence. This is the *Axiom of Becoming*.
4. Life is found in various modes and scales and conforms to no known pre-set ideals.
5. Life's fundamental elements do not conform to predetermined principles but may spontaneously evolve.
6. Life's balancing principles alternate between (relatively) long-term peaceful or uniform periods and (relatively) short-term violent or sudden (even cataclysmic) periods of forced evolution; the so-called "catch up" phenomenon.
7. Life is. It is neither likely nor unlikely, though it may be influenced into more or less likelihood by the availability of resources.

<sup>249</sup> [https://en.wikipedia.org/wiki/Faraday%27s\\_law\\_of\\_induction](https://en.wikipedia.org/wiki/Faraday%27s_law_of_induction)

<sup>250</sup> [https://en.wikipedia.org/wiki/Maxwell%27s\\_equations](https://en.wikipedia.org/wiki/Maxwell%27s_equations)

<sup>251</sup> [https://en.wikipedia.org/wiki/Lenz%27s\\_law](https://en.wikipedia.org/wiki/Lenz%27s_law)

<sup>252</sup> [https://en.wikipedia.org/wiki/Kirchhoff%27s\\_circuit\\_laws](https://en.wikipedia.org/wiki/Kirchhoff%27s_circuit_laws)

<sup>253</sup> V=voltage (volts), I = current (amps), R = resistance (ohms)

<sup>254</sup> [https://en.wikipedia.org/wiki/Amp%C3%A8re%27s\\_circuital\\_law](https://en.wikipedia.org/wiki/Amp%C3%A8re%27s_circuital_law)

<sup>255</sup> <https://www.britannica.com/science/hysteresis>

<sup>256</sup> By Sf. Ramon Careaga, BSEE, MSTOM

<sup>257</sup> Qi seems to be related to, but not equivalent with, Charge (Q) in all manners of behavior.

Table of Units, Symbols, and Dimensions

	Quantity	Symbol	mks Unit Rationalized	Defining Equation	Dimensional Formula Exponents of				cgs emu	No. of emu No. of mks	cgs esu	No. of esu No. of mks	No. of esu No. of emu
					L	M	T	Q					
1	Length	$L$	m		1	0	0	0	cm	$10^2$	cm	$10^2$	1
2	Area	$A$	$m^2$	$A = L^2$	2	0	0	0	$cm^2$	$10^4$	$cm^2$	$10^4$	1
3	Volume	$v$	$m^3$	$v = L^3$	3	0	0	0	$cm^3$	$10^6$	$cm^3$	$10^6$	1
4	Mass	$M, m$	kilogram		0	1	0	0	gram	$10^3$	gram	$10^3$	1
5	Time	$T, t$	second		0	0	1	0	second	1	second	1	1
6	Velocity	$v$	$m / sec$	$v = L / T$	1	0	-1	0	$cm / sec$	$10^2$	$cm / sec$	$10^3$	1
7	Acceleration	$g$	$m / sec^2$	$g = L / T^2$	1	0	-2	0	$cm / sec^2$	$10^2$	$cm / sec^2$	$10^2$	1
8	Force	$F$	newton	$F = Ma$	1	1	-2	0	dyne	$10^5$	dyne	$10^5$	1
9	Energy	$W$	joule	$W = FL$	2	1	-2	0	erg	$10^7$	erg	$10^7$	1
10	Power	$P$	watt	$P = W / T$	2	1	-3	0	erg/sec	$10^7$	erg/sec	$10^7$	1
11	Charge	$Q, q$	coulomb	$F = Q^2 / (4\pi\epsilon_0 L^2)$	0	0	0	1	abcoulomb	$10^{-1}$	statcoulomb	$10c$	$100c$
12	Dielectric constant of free space	$\epsilon_0$	farad / m	$\epsilon_0 = 1 / (\mu_0 c^2)$	-3	-1	2	2		1		$4\pi c^2 / 10^7$	
13	Dielectric constant relative	$\epsilon_r$	farad / m	$\epsilon_r = \epsilon / \epsilon_0$	-3	-1	2	2				1	
14	Charge density		numeric		0	0	0	0					
15	volume	$\rho$	coulomb / $m^3$	$\rho = Q / V$	-3	0	0	1	abcoulomb / $cm^3$	$10^{-7}$	statcoulomb / $cm^3$	$c / 10^5$	$100c$
16	surface	$\rho_s$	coulomb / $m^2$	$\rho_s = Q / A$	-2	0	0	1	abcoulomb / $cm^2$	$10^{-5}$	statcoulomb / $cm^2$	$c / 10^5$	$100c$
17	line	$\rho_l$	coulomb / m	$\rho_l = Q / L$	-1	0	0	1	abcoulomb / cm	$10^{-3}$	statcoulomb / cm	$c / 10$	$100c$
18	Electric intensity	$E$	volt / m	$E = F / Q = -V / L$	1	1	-2	-1	abvolt / cm	$10^6$	statvolt / cm	$10^4 / c$	$1 / (100c)$
19	Electric flux density	$D$	coulomb / $m^2$	$D = \epsilon E = \psi / A$	-2	0	0	1		$4\pi / 10^3$		$4\pi c / 10^3$	$100c$
20	Electric flux	$\psi$	coulomb	$\psi = DA$	0	0	0	1		$4\pi / 10$		$4\pi 10c$	$100c$
21	Electric potential	$V$	volt	$V = -EL$	2	1	-2	-1	abvolt	$10^6$	statvolt	$10^6 / c$	$1 / (100c)$
22	EMF	$V_g$	volt	$V_g = -d\phi / dt$	2	1	-2	-1	abvolt	$10^6$	statvolt	$10^6 / c$	$1 / (100c)$
23	Capacitance	$C$	farad	$C = Q / V$	-2	-1	2	2	abfarad	$10^9$	statfarad	$c^2 / 10^3$	$(100c)^2$
24	Current	$I, i$	ampere	$I = Q / T$	0	0	-1	1	abampere	$10^1$	statampere	$10c$	$100c$
25	Current density	$J$	ampere / $m^2$	$J = I / A$	-2	0	-1	1	abampere / $cm^2$	$10^{-3}$	statampere / $cm^2$	$c / 10^3$	$100c$
26	Resistance	$R$	ohm	$R = V / I$	2	1	-1	-2	abohm	$10^9$	statohm	$10^7 / c^2$	$1 / (100c)^2$
27	Resistivity	$\rho$	ohm-m	$\rho = RA / L$	3	1	-1	-2	abohm-cm	$10^{11}$	statohm-cm	$10^7 / c^2$	$1 / (100c)^2$
28	Conductance	$G$	mho	$G = I / R$	-2	-1	1	2	abmho	$10^9$	statmho	$c^2 / 10^3$	$(100c)^2$
29	Conductivity	$\sigma$	mho / m	$\sigma = I / \rho = J / E$	-3	-1	1	2	abmho / cm	$10^{11}$	statmho / cm	$c^2 / 10^7$	$(100c)^2$
30	Electric polarization	$P$	coulomb / $m^2$	$P = D - \epsilon_0 E = \rho L$	-2	0	0	1	abcoulomb / $cm^2$	$10^{-5}$	statcoulomb / $cm^2$	$c / 10^3$	$100c$
31	Electric susceptibility	$\chi_e$	farad / m	$\chi_e = P / E = \epsilon_0 (\epsilon_r - 1)$	-3	-1	2	2		1	statcoulomb-cm	$4\pi c^2 / 10^7$	
32	Electric dipole moment	$m_e$	coulomb-m	$m_e = QL$	1	0	0	1				$10^3 c$	
33	Electric energy density	$\omega_e$	joule / $m^3$	$\omega_e = DE / 2$	-1	1	-2	0	erg / $cm^3$	1	erg / $cm^3$	10	1

	Quantity	Symbol	mks Unit Rationalized	Defining Equation	Dimensional Formula Exponents of				cgs emu	No. of emu No. of mks	cgs esu	No. of esu No. of mks	No. of esu No. of emu
					L	M	T	Q					
34	Permeability of free space	$\mu_0$	henry / m	$\mu_0 = 4\pi / 10^7$	1	1	0	-2		$10^7 / 4\pi$			
35	Permeability	$\mu$	henry / m	$\mu = B / H$	1	1	0	-2		1			
36	relative	$\mu_r$	numeric	$\mu_r = \mu / \mu_0$	0	0	0	0					
37	Magnetic pole	$p$	weber	$p = A (B - B_0)$	2	1	-1	-1	pole	$10^3 / 4\pi$			
38	Magnetic moment	$m$	weber-m	$m = pL$	3	1	-1	-1	= maxwell / 4π				
39	Magnetic intensity	$H$	ampere / m or newton / weber	$H = U / L \text{ or } F / p$	-1	0	-1	1	pole-cm	$10^{10} / 4\pi$			
40	Magnetic flux density	$B$	weber / $m^2$	$B = \mu H = \phi / A$	0	1	-1	-1	oersted or gilbert / cm	$4\pi / 10^3$			
41	Magnetic flux	$\phi$	weber	$\phi = BA = V_g T$	2	1	-1	-1	gauss or maxwell / $cm^2$	$10^4$			
42	Magnetic potential	$U$	ampere	$U = \mathcal{F} / HL$	0	0	-1	1	maxwell	$10^8$			
43	MMF	$\mathcal{F}$	ampere	$\mathcal{F} = I$	0	0	-1	1	gilbert	$4\pi / 10$			
44	Intensity of magnetization	$M$	weber / $m^2$	$M = B - B_0 = m / L^3$	0	1	-1	-1	gilbert	$4\pi / 10$			
45	Inductance self	$L$	henry	$L = \phi / I$	2	1	0	-2	pole / $cm^2$ or gauss / $4\pi$	$10^9$			
46	mutual	$M$	henry	$M = \phi / I = W / F$	2	1	0	-2	abhenry	$10^9$			
47	Reluctance	$\mathcal{R}$	ampere / weber	$\mathcal{R} = \mathcal{F} / \phi$	-2	-1	0	2	abhenry	$10^9$			
48	Reluctivity	$\nu$	meter / henry	$\nu = I / \mu$	-1	-1	0	2					
49	Permeance	$\mathcal{P}$	weber / amp	$\mathcal{P} = I / \mathcal{R}$	2	1	0	-2					
50	Permittivity	$\mu$	henry / meter	$\mu = I / \nu$	1	1	0	-2					
51	EMF	$V_g$	volt	$V_g = -d\phi / dt$	2	1	-2	-1	abvolt	$10^8$	statvolt	$10^8 / c$	$1 / (100c)$
52	Poynting's vector	$\mathcal{P}$	watts / $m^2$	$\mathcal{P} = EH$	0	1	-3	0	abwatt / $cm^2$	$10^3$	statwatt / $cm^2$	$10^3$	1
53	Magnetic energy density	$\omega_m$	joule / $m^3$	$\omega_m = HB / 2$	-1	1	-2	0	erg / $cm^3$	10			
54	Magnetic susceptibility	$x_m$	henry / m	$x_m = M / H$ $= \mu_0 (\mu_r - 1)$	1	1	0	-2	henry / m	$10^7 / 4\pi$			

$\mu_0 = 4\pi / 10^7$  henrys / m. For  $c = 2.998 \times 10^8$  meters / sec,  $\epsilon_0 = 1 / \mu_0 c^2 = 10^7 / (4\pi c^2) = 8.854 \times 10^{-12}$  farad / meter

For  $c \sim 3 \times 10^8$  meters / sec,  $\epsilon_0 \sim 1 / (36\pi 10^8)$  farad / meter

$c^2 = 8.988 \times 10^{16} \sim 9 \times 10^{16}$

 Table 4 - SI Units in Physics; credit: E Dollard<sup>258</sup>

<sup>258</sup> <http://www.gestaltreality.com/energy-synthesis/eric-dollard/metrical-dimensional-relations-of-the-aether-by-e-p-dollard/>

## Appendix C - References

1. "Extended Plasma-electromagnetic Cosmology", Sf. R. Careaga, 2018
2. "On the Origins of Religions", Sf. R. Careaga, 2018
3. "Unboxing Atlantis", Sf. R. Careaga, 2018
4. "The Magnetic Universe", Sf. R. Careaga, 2018
5. "The jets of AGN as giant coaxial cables," D. Gabuzda et al, 2017, <https://arxiv.org/pdf/1712.08414.pdf>
6. "Lost planet gave birth to space rock's diamonds," Nature Inter Journal of Science, 2018, <https://www.nature.com/articles/d41586-018-04728-7>
7. "Fifth Force." Wiki, [https://en.wikipedia.org/wiki/Fifth\\_force](https://en.wikipedia.org/wiki/Fifth_force)
8. "Scientists discover 10,000 black holes hiding at centre of Milky Way," A. Griffin, 2018, <https://www.independent.co.uk/news/science/black-holes-milky-way-space-discover-galaxy-columbia-university-a-8288621.html>
9. "Gilgamesh, Enkidu and the nether world: translation," Sumerian Literature, 2002, <http://etcsl.orinst.ox.ac.uk/section1/tr1814.htm>
10. "Terrestrial Atmosphere ITM (Ionosphere, Thermosphere, Mesosphere) Processes," NASA, 2018, <https://svs.gsfc.nasa.gov/4641>
11. "Pressure and gravity at the center of the earth." Physics Stack Exchange, 2017, <https://physics.stackexchange.com/questions/330028/pressure-and-gravity-at-the-center-of-the-earth>
12. "Seafloor spreading," Wiki, [https://en.wikipedia.org/wiki/Seafloor\\_spreading](https://en.wikipedia.org/wiki/Seafloor_spreading)
13. "Mid-Ocean Ridge," Wiki, [https://en.wikipedia.org/wiki/Mid-ocean\\_ridge](https://en.wikipedia.org/wiki/Mid-ocean_ridge)
14. "Rate of plate creation and destruction: 180 Ma to present," D. Rowley, 2002, [https://geosci.uchicago.edu/~rowley/Rowley/Publications\\_files/GSABRidgeProduction.pdf](https://geosci.uchicago.edu/~rowley/Rowley/Publications_files/GSABRidgeProduction.pdf)
15. "Geologically current motion of 56 plates relative to the no-net-rotation reference frame," D. Argus et al. 2011, <https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2011GC003751>
16. "Absolute plate motions relative to deep mantle plumes," S. Wang et al., 2018, <https://www.sciencedirect.com/science/article/pii/S0012821X18301432>
17. "Inductance Modeling using New Electromagnetism," R. Distinti, 2007
18. "Electroweak theory," C. Sutton, <https://www.britannica.com/science/electroweak-theory>
19. "Evidence for Internal Earth Structure and Composition," Columbia Edu, [http://www.columbia.edu/~vjd1/earth\\_int.htm](http://www.columbia.edu/~vjd1/earth_int.htm)
20. "Element Abundance in the Solar System," Anders, Edwards, Grevesse, 1989, [http://www.knowledgedoor.com/2/elements\\_handbook/element\\_abundances\\_in\\_the\\_solar\\_system.html](http://www.knowledgedoor.com/2/elements_handbook/element_abundances_in_the_solar_system.html)
21. "Found! Hidden Ocean Locked Up Deep in Earth's Mantle," J. Castro, 2014, <https://www.livescience.com/46292-hidden-ocean-locked-in-earth-mantle.html>
22. "Magnetic Reversal," NASA, NOAA, and ESA, <http://magneticreversal.org/>
23. "Are the Earth's magnetic poles moving? How do navigators adjust to this change?", P. Perreault, <https://www.scientificamerican.com/article/are-the-earths-magnetic-p/>
24. "Earth's magnetic field is probably not reversing," M. Brown et al, 2018, <http://www.pnas.org/content/early/2018/04/24/1722110115>
25. "Where are we (Solar System ) Going?" B. Davidson, 2017, <https://sites.google.com/site/electricuniversegateway/recent-news/wherearewesolarsystemgoing-bendavidson>
26. "Pangea, Supercontinent," Lotha, 2018, <https://www.britannica.com/place/Pangea>
27. "Mass Extinctions Over Earth History," <http://seas.umich.edu/~dallan/nre220/outline3.htm>
28. "Extinction," Wiki, <https://en.wikipedia.org/wiki/Extinction>
29. "Life Cycle of a Star," NSO, <https://www.schoolsobservatory.org/learn/astro/stars/cycle>
30. "Electric Sky," D. Scott, 1980
31. "Origins of Quasars and Galaxy Clusters," Arp, 2001, [https://www.haltonarp.com/articles/origins\\_of\\_quasars\\_and\\_galaxy\\_clusters](https://www.haltonarp.com/articles/origins_of_quasars_and_galaxy_clusters)
32. "The Big Picture: 65 million years of temperature swings," JoNova, <http://joannenova.com.au/2010/02/the-big-picture-65-million-years-of-temperature-swings/>
33. "Can Rocky Exoplanets With Rings Pose As Sub-Neptunes?" A. Piro, 2011, <https://arxiv.org/pdf/1805.01478.pdf>

34. "Gaia Hypothesis," Harvard.edu.,  
<https://courses.seas.harvard.edu/climate/eli/Courses/EPS281r/Sources/Gaia/Gaia-hypothesis-wikipedia.pdf>
35. "Beyond Darwin: Scientists May Be Redefining Evolution," E.Corpuz, 2016,  
<https://futurism.com/beyond-darwin-scientists-may-be-redefining-evolution/>
36. "Rosetta finds Comet Connection to Earth's Atmosphere,"  
2017,<http://sci.esa.int/rosetta/59177-rosetta-finds-comet-connection-to-earth-s-atmosphere/>
37. "Despite everything. NASA refuse to see sense." N. Wilkes. 2014.
38. <http://thunderbolts.info/forum/phpBB3/viewtopic.php?f=3&t=15322&sid=98cc3911ef20b475d801d314754be757#p100047>
39. "Astronomers just found the smallest star ever. It is even smaller than Jupiter,"T. Puiu, 2017,  
<https://www.zmescience.com/science/news-science/smallest-star-ever231231/>
40. " How Cold Is a Y Dwarf Star? Even You Are Warmer?" C. Choi, 2011,  
<https://www.space.com/12714-coldest-failed-stars-brown-dwarfs-wise.html>
41. "New Clues to TRAPPIST-1 Planet Compositions, Atmospheres," E.Landau, 2018, NASA  
<https://www.nasa.gov/feature/jpl/new-clues-to-trappist-1-planet-compositions-atmospheres>
42. "Fast-spinning neutron star smashes speed limit," M. McKee, 2006,  
<https://www.newscientist.com/article/dn8576-fast-spinning-neutron-star-smashes-speed-limit/>
43. " Estimation of the mass of a coronal mass ejection from radio observations," N. Gopalswamy et al., 1992,<http://adsabs.harvard.edu/full/1992ApJ...390L..37G>
44. "The jets of AGN as giant coaxial cables," D. Gabuzda et al., 2017, <https://arxiv.org/pdf/1712.08414.pdf>
45. "Measurements of the Electric Current in a Kpc-scale Jet," P. Kronberg et al. 2011,  
<http://iopscience.iop.org/article/10.1088/2041-8205/741/1/L15/pdf>
46. "Electric Sun and Stars, Electrobleme, 2015, <https://www.everythingselectric.com/electric-sun/>
47. "Ralph Juergens," 2015, <https://www.everythingselectric.com/ralph-juergens/>
48. "The Electric Sun Hypothesis,"R. Juergens, <http://electric-cosmos.org/sun.htm>
49. "Electric Discharge as the Source of Solar Radiant Energy (Concluded),"R. Juergens, 1982,  
<https://www.kronos-press.com/juergens/k0802-electric-ii.htm>
50. "Our Misunderstood Sun," W. Thornhill, 2010, <http://www.holoscience.com/wp/our-misunderstood-sun/>
51. "Marklund Convection and Z Pinches Explained," Electric Universe Gateway," S. Careaga, 2017  
<https://sites.google.com/site/electricuniversegateway/recent-news/markulandconvectionandz-pinchesexplained>
52. "Study of striations in a spherically symmetric Hydrogen discharge," W. Morgan, M. Childs, 2015,  
[https://drive.google.com/file/d/0ByRZ\\_FN\\_vit\\_VTI5Uzg2cFVGSwM/view](https://drive.google.com/file/d/0ByRZ_FN_vit_VTI5Uzg2cFVGSwM/view)
53. "Ancient Destructions," P. Mupp
54. "Magnetic Reconnection – Reinventing the Wheel," D. Scott, 2008,  
[http://www.thunderbolts.info/thunderblogs/archives/descott08/021608\\_reinventing\\_the\\_wheel.htm](http://www.thunderbolts.info/thunderblogs/archives/descott08/021608_reinventing_the_wheel.htm)
55. "Red Light vs. Blue Light: Which Light Color Is Better For Plant Growth," L.Baessler, 2016,  
<https://www.gardeningknowhow.com/garden-how-to/design/lighting/red-light-vs-blue-light.htm>
56. "Why doesn't the Sun appear Green to our Eyes?"Stack Exchange-Physics, 2015  
<https://physics.stackexchange.com/questions/171595/why-doesnt-the-sun-appear-green-to-our-eyes>
57. "Why does the Sun appear yellow?" "Stack Exchange-Physics, 2015 ,  
<https://physics.stackexchange.com/questions/354749/why-does-the-sun-appear-yellow>
58. The Saturn Myth," D Talbott, 1980
59. "Electric Discharge as the Source of Solar Radiant Energy," R. Juergens, 1982  
<https://www.kronos-press.com/juergens/1982-electric-solar-energy-juergens.pdf>
60. "Counter-Rotation In Relativistic Magnetohydrodynamic Jets,"V. Cayette et al., 2014,  
<http://iopscience.iop.org/article/10.1088/2041-8205/788/1/L19/pdf>
61. "Herschel Views Deep-Space Pearls on a Cosmic String," 2009,  
[https://www.esa.int/Our\\_Activities/Space\\_Science/Herschel/Herschel\\_views\\_deep-space\\_pearls\\_on\\_a\\_cosmic\\_string](https://www.esa.int/Our_Activities/Space_Science/Herschel/Herschel_views_deep-space_pearls_on_a_cosmic_string)
62. "Galaxies in filaments spaced like pearls on a necklace," L. Kruesi, 2014,  
<https://www.newscientist.com/article/dn26598-galaxies-in-filaments-spaced-like-pearls-on-a-necklace/>
63. "Terella," Plasma Universe, 2018, <https://www.plasma-universe.com/Terrella>

64. "A Vast Thin Plane of Co-rotating Dwarf Galaxies Orbiting the Andromeda Galaxy," R. Ibata et al. 2013, <https://arxiv.org/abs/1301.0446>
65. "Spiral Galaxy Rotation Curves Without Dark Matter or MOND – Two Conjectures\*," T. Biswas, 2018, <https://arxiv.org/pdf/1801.09304.pdf>
66. "Transistor Model of the Sun's surface," D. Scott, Electric Universe, 2017, <https://sites.google.com/site/electricuniversegateway/recent-news/transistormodelofthesunssurface-donscott>
67. Model, "Birkeland Currents: A Force-Free Field-Aligned" D. Scott, 2015, <http://www.ptep-online.com/2015/PP-41-13.PDF>
68. "Vortex Algebra," R. Distinti, 2018
69. "Birkeland Current Efficiency :  
Sheet1"[https://docs.google.com/spreadsheets/d/e/2PACX-1vTcQhqsF1-tdf2VcAf2uubrvJj7eGpcn8O5NBU7tSGrh6KOnwdoTMFU5a3fB9NOe\\_bYcEvZTWDTY58/pubhtml?gid=0&single=true](https://docs.google.com/spreadsheets/d/e/2PACX-1vTcQhqsF1-tdf2VcAf2uubrvJj7eGpcn8O5NBU7tSGrh6KOnwdoTMFU5a3fB9NOe_bYcEvZTWDTY58/pubhtml?gid=0&single=true)
70. "Electric currents in space plasmas.", 2018, [https://www.plasma-universe.com/Electric\\_currents\\_in\\_space\\_plasmas](https://www.plasma-universe.com/Electric_currents_in_space_plasmas)
71. "The Nobel Prize in Physics 1970," [https://www.nobelprize.org/nobel\\_prizes/physics/laureates/1970/](https://www.nobelprize.org/nobel_prizes/physics/laureates/1970/)
72. "Magnetohydrodynamics," H. Koskinen, 2010, [https://link.springer.com/chapter/10.1007%2F978-3-642-00319-6\\_6](https://link.springer.com/chapter/10.1007%2F978-3-642-00319-6_6)
73. "The Sun May Be Seen in part as a MHD system," H. Alfvén, 2015, <https://www.everythingselectric.com/hannes-alfven/>
74. "Ulysses (spacecraft)" Wiki, [https://en.wikipedia.org/wiki/Ulysses\\_\(spacecraft\)](https://en.wikipedia.org/wiki/Ulysses_(spacecraft))
75. "Scientists have unlocked the secrets of 'doomsday' solar storms that can cause devastation on Earth by knocking out satellites and power grids." J. Pinkstone, 2018, <http://www.dailymail.co.uk/sciencetech/article-5371481/Scientists-predict-solar-flares.html>
76. "Earth's magnetic poles could be about to flip," , 2017, <http://theday.co.uk/attachments/2017/2017-02/earth-s-magnetic-poles-could-be-about-to-flip.pdf>
77. "NASA Spacecraft Discovers New Magnetic Process in Turbulent Space," NASA, <https://www.nasa.gov/feature/goddard/2018/nasa-spacecraft-discovers-new-magnetic-process-in-turbulent-space>
78. "Solar Wind Theory Confirmed," M. Sincell, 2001, <http://www.sciencemag.org/news/2001/05/solar-wind-theory-confirmed>
79. "Hydrogen solar wind combined with ozone Chemistry," I de Pater, J. Lissauer, 2001, <http://bit.ly/2OdZego>
80. "Solar Variations, Ozone, and the Middle Atmosphere," 1994, <https://www.nap.edu/read/4778/chapter/5>
81. "South Atlantic Anomaly," Wiki, [https://en.wikipedia.org/wiki/South\\_Atlantic\\_Anomaly](https://en.wikipedia.org/wiki/South_Atlantic_Anomaly)
82. "Forget global warming, worry about the MAGNETOSPHERE: Earth's magnetic field is collapsing and it could affect the climate and wipe out power grids," E. Zolfaghari, 2014, <http://www.dailymail.co.uk/sciencetech/article-2545465/Forget-global-warming-worry-MAGNETOSPHERE-Earths-magnetic-field-collapsing-affect-climate-wipe-power-grids.html>
83. "A Mysterious Anomaly Under Africa Is Radically Weakening Earth's Magnetic Field," P. Dockrill, 2018, <https://www.sciencealert.com/something-mysterious-under-southern-africa-dramatically-weakening-earth-s-magnetic-field-south-atlantic-anomaly>
84. "Does an anomaly in the Earth's magnetic field portend a coming pole reversal," J. Tarduno, V. Hare, 2017, <https://theconversation.com/does-an-anomaly-in-the-earths-magnetic-field-portend-a-coming-pole-reversal-47528>
85. "Magnetic Reversal - Effects on Earth," NASA, NOAA, ESA, <http://magneticreversal.org/>
86. "Pole Shift Hypothesis, Wiki, [https://en.wikipedia.org/wiki/Pole\\_shift\\_hypothesis](https://en.wikipedia.org/wiki/Pole_shift_hypothesis)
87. "Anomalous mesospheric ozone variability is not a precursor to earthquakes: A case study in Greece", Varatsos et al..., 2017 <https://www.sciencedirect.com/science/article/pii/S1364682618304140>
88. "Sprites and Their Siblings", A. Alden, 2017, <https://www.thoughtco.com/sprites-and-their-siblings-1441223>
89. "Plasma cosmology,"[https://www.plasma-universe.com/Plasma\\_cosmology](https://www.plasma-universe.com/Plasma_cosmology)
90. "Origins of the Universe," National Geo, <https://www.nationalgeographic.com/science/space/universe/origins-of-the-universe/>
91. "Macroscopic Quantum Electrodynamics of a Plasma Model: Derivation of the Vlasov Kinetics," G. Sewell, 1997, <https://link.springer.com/article/10.1023/A:1007362324637>
92. "QED Plasma and Magnetars," M. Freytsis, S. Gralla, 2015, <https://arxiv.org/abs/1503.03867>
93. "Relationship between plasma physics and quark gluon plasma," 2014, <https://physics.stackexchange.com/questions/136674/relationship-between-plasma-physics-and-quark-gluon-plasma>

94. "The effect of nonlinear quantum electrodynamics on relativistic transparency and laser absorption in ultra-relativistic plasmas," P. Zhang, 2015, <http://iopscience.iop.org/article/10.1088/1367-2630/17/4/043051/pdf>
95. "Was Einstein the First to Discover General Relativity? D. Liese, <http://blog.press.princeton.edu/2015/11/25/einsteins-race-was-einstein-the-first-to-discover-general-relativity/>
96. "Gravitational wave", Wiki, [https://en.wikipedia.org/wiki/Gravitational\\_wave](https://en.wikipedia.org/wiki/Gravitational_wave)
97. "Einstein: Ether and Relativity," A. Einstein, 1920 [http://www-history.mcs.st-andrews.ac.uk/Extras/Einstein\\_ether.html](http://www-history.mcs.st-andrews.ac.uk/Extras/Einstein_ether.html)
98. "On the Gaia DR2 distances for Galactic Luminous Blue Variables," N. Smith et al, 2018, <https://arxiv.org/pdf/1805.03298.pdf>
99. "Kristian Birkeland," Plasma Universe, [http://www.plasma-universe.com/Kristian\\_Birkeland?title=Special:Categories&article=Kristian\\_Birkeland#Investigating\\_the\\_aurora](http://www.plasma-universe.com/Kristian_Birkeland?title=Special:Categories&article=Kristian_Birkeland#Investigating_the_aurora)
100. "Texts:On Possible Electric Phenomena in Solar Systems and Nebulae," Plasma Universe, [http://www.plasma-universe.com/Texts:On\\_Possible\\_Electric\\_Phенomena\\_in\\_Solar\\_Systems\\_and\\_Nebulae](http://www.plasma-universe.com/Texts:On_Possible_Electric_Phенomena_in_Solar_Systems_and_Nebulae)
101. "Princeton Plasma Physics Laboratory" Wiki, [https://en.wikipedia.org/wiki/Princeton\\_Plasma\\_Physics\\_Laboratory](https://en.wikipedia.org/wiki/Princeton_Plasma_Physics_Laboratory)
102. "Big machines: two radiation generators mark major milestones in helping protect the U.S.," Sandia, 2011, [https://share-ng.sandia.gov/news/resources/news\\_releases/saturn-hermes/#.WwBf3u4vztQ](https://share-ng.sandia.gov/news/resources/news_releases/saturn-hermes/#.WwBf3u4vztQ)
103. "China Launches Earth-Observing Satellite on Long March 2D Rocket," T. Malik, 2018, <https://www.space.com/39387-china-launches-land-use-satellite.html>
104. "Electron magnetic reconnection without ion coupling in Earth's turbulent magnetosheath," T. Phan et al., 2018, <https://www.nature.com/articles/s41586-018-0091-5>
105. "Langmuir probe," Wiki, [https://en.wikipedia.org/wiki/Langmuir\\_probe](https://en.wikipedia.org/wiki/Langmuir_probe)
106. "Oscillations in Ionized Gases," L. Tonks, I. Langmuir, 1929, [http://www.columbia.edu/~mem4/ap6101/Tonks\\_Langmuir\\_PR29.pdf](http://www.columbia.edu/~mem4/ap6101/Tonks_Langmuir_PR29.pdf)
107. "Plasma oscillation," Wiki, [https://en.wikipedia.org/wiki/Plasma\\_oscillation](https://en.wikipedia.org/wiki/Plasma_oscillation)
108. History of "Plasmas," H. Mott-Smith, 1971, <https://www.nature.com/articles/233219a0.pdf>
109. "On the Magnet," W. Gilbert, 1900, <http://rack1.ul.cs.cmu.edu/is/gilbert/>
110. "De Magnete," Wiki, [https://en.wikipedia.org/wiki/De\\_Magnete](https://en.wikipedia.org/wiki/De_Magnete)
111. "The Luminous World," B.K. von Reichenbach, [https://borderlandsciences.org/project/od/article/Vassilatos\\_on\\_Reichenbach\\_Odic.html](https://borderlandsciences.org/project/od/article/Vassilatos_on_Reichenbach_Odic.html)
112. "Double Layer- Plasma Physics," Wiki, [https://en.wikipedia.org/wiki/Double\\_layer\\_\(plasma\\_physics\)](https://en.wikipedia.org/wiki/Double_layer_(plasma_physics))
113. "Is our Sun Conscious.....?" J. Deschamps, 2017, [https://en.wikipedia.org/wiki/Double\\_layer\\_\(plasma\\_physics\)](https://en.wikipedia.org/wiki/Double_layer_(plasma_physics))
114. "[Mysterious Signal Originating From Jupiter Discovered -Changes In Its Intensity Observed](#)", 2012, <http://www.messagestoeagle.com/signalunknownjupiter.php>
115. "Ground and Space Observations of Jovian Radio Emissions" M.Wilkinson et al., <http://www.spaceacademy.net.au/spacelab/projects/mhw/io-b.htm>
116. "Hiding from Jupiter's Radiation," M. Schriber 2009, <https://www.astrobio.net/news-exclusive/hiding-from-jupiters-radiation/>
117. "Saturn's Hexagon," Wiki, [https://en.wikipedia.org/wiki/Saturn%27s\\_hexagon](https://en.wikipedia.org/wiki/Saturn%27s_hexagon)
118. "Generation of parallel electric fields in the Jupiter- Io torus wake region," R. Ergun et al., 2009, <https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2008JA013968>
119. "Io- -Jupiter System: A Unique Case of Moon- Planet Interaction," A. Bhardwaj, M. Michael, <https://arxiv.org/ftp/astro-ph/papers/0209/0209070.pdf>
120. "Star Smaller than Jupiter Discovered," 2017, <http://www.eniscuola.net/en/2017/07/18/star-smaller-jupiter-discovered/>
121. "The Sun-Jupiter Connection," R. Gladstone, <http://spacewx.com/jupiter/docs/JupiterAurora.pdf>
122. "Jupiter and The Sun," S. Smith, 2014, <http://spacewx.com/jupiter/docs/JupiterAurora.pdf>
123. "Empirical evidence for stability of the 405-kiloyear Jupiter–Venus eccentricity cycle over hundreds of millions of years," D. Kent et al., 2018, <http://www.pnas.org/content/early/2018/05/01/1800891115>
124. "Jupiter's Great Red Spot May Soon Disappear...Or Not...," N. Drake 2018, <https://news.nationalgeographic.com/2018/02/jupiter-great-red-spot-disappear-10-years-space-science-spd/>
125. "Astronomers have just made a fascinating discovery on Jupiter," Ivan, <https://ancient-code.com/astronomers-have-just-made-a-fascinating-discovery-on-jupiter/>
126. NASA, Cassini Missions, <https://solarsystem.nasa.gov/missions/cassini/overview/>

127. "Two dynamos drive Jupiter's magnetic field," 2014, [https://www.mpg.de/8373381/two-dynamos\\_Jupiter](https://www.mpg.de/8373381/two-dynamos_Jupiter)
128. "New Electromagnetism," R. Distini, 2007, <http://www.distinti.com/docs/v1/ne.pdf>
129. "New Gravity," R. Distini, 2007, <https://sites.google.com/site/electricuniversegateway/Distinti/ng.pdf>
130. "Planet Nine Could Be Our Solar System's Missing 'Super Earth' S. Mathewson, 2017, <https://www.space.com/38431-new-evidence-planet-nine-existence.html>
131. "Thin current sheets in space: where the action is," Sweedish Institute of Space 2012, <https://phys.org/news/2012-08-thin-current-sheets-space-action.html>
132. "Magnetic Seismology of Interstellar Gas Clouds: Unveiling a Hidden Dimension," A. Tritsis, K. Tassis, 2003, <https://arxiv.org/ftp/arxiv/papers/1805/1805.03664.pdf>
133. "The "Great Wall" Of Space: Galactic Superclusters a Billion Light Years Away Extend for 5% of Observable Universe," L. McKinney, 2009, [http://www.dailyspace.com/my\\_weblog/2009/08/great-wall-of-space-galactic-superclusters-a-billion-light-years-away-extend-for-5-the-length-of-obs.html](http://www.dailyspace.com/my_weblog/2009/08/great-wall-of-space-galactic-superclusters-a-billion-light-years-away-extend-for-5-the-length-of-obs.html)
134. "The Galactic Center Massive Black Hole and Nuclear Star Cluster," R. Genzel et al. <https://arxiv.org/ftp/arxiv/papers/1006/1006.0064.pdf>
135. "Einstein's anomalous clock synchronisation," S. Crothers, 2017, <http://vixra.org/pdf/1702.0214v1.pdf>
136. "Physicists Find Evidence That The Universe Is A 'Giant Brain,'" M. Rundle, 2013, [https://www.huffingtonpost.co.uk/2012/11/27/physicists-universe-giant-brain\\_n\\_2196346.html](https://www.huffingtonpost.co.uk/2012/11/27/physicists-universe-giant-brain_n_2196346.html)
137. "Half the universe's missing matter has just been finally found," L. Crane, 2017, <https://www.newscientist.com/article/2149742-half-the-universes-missing-matter-has-just-been-finally-found/>
138. "Earth's Magnetism In Action," K. Fox, 2016, <https://svs.gsfc.nasa.gov/12249>
139. "Upper-atmospheric lightning," Wiki, [https://en.wikipedia.org/wiki/Upper-atmospheric\\_lightning](https://en.wikipedia.org/wiki/Upper-atmospheric_lightning)
140. "Elves, Sprites & Blue Jets: Earth's Weirdest Lightning,: C. Choi, 2014, <https://www.livescience.com/42731-weird-lightning-types.html>
141. "VLF observations of ionospheric disturbances in association with TLEs from the EuroSprite-2007 campaign," S. NaitAmor et al., 2010, <https://agupubs.onlinelibrary.wiley.com/doi/pdf/10.1029/2009JA015026>
142. "Volcanic Lightning," L. Weirup, 2010, <http://volcano.oregonstate.edu/volcanic-lightning>
143. "Yttrium barium copper oxide," Wiki, [https://en.wikipedia.org/wiki/Yttrium\\_barium\\_copper\\_oxide](https://en.wikipedia.org/wiki/Yttrium_barium_copper_oxide)
144. "My Inventions," N. Tesla, [http://www.tfcbooks.com/e-books/my\\_inventions.pdf](http://www.tfcbooks.com/e-books/my_inventions.pdf)
145. "Tesla Coil Wireless Power Transmission," P. Chavan, 2018, <http://www.ijser.org/pdf/122063.pdf>
146. "A study on wireless power transfer using tesla coil technique," P. Aziz et al. <https://ieeexplore.ieee.org/document/7873564/authors>
147. Daodejing, verses 5, 7, and 25
148. "Weatherman's Guide to the Sun," B. Davidson, 2017
149. "Chaos In Magnetic Flux Ropes," W. Gekelman et al, 2014, <http://iopscience.iop.org/article/10.1088/0741-3335/56/6/064002>
150. "The plasma–sheath boundary: its history and Langmuir's definition of the sheath edge," J. Allen 2008, <http://iopscience.iop.org/article/10.1088/0963-0252/18/1/014004>
151. "Time and Moving Clocks," <http://www.emc2-explained.info/Time-Dilation/#.WwGjTu4vzIR>
152. EtherealMatters.org., " Structured Atom Model Overview," <https://etherealmatters.org/sam>
153. "The Tau Manifesto," M. Hartl, <https://tauday.com/>
154. "Thermodynamics: The 4 Laws," <http://physicsforidiots.com/physics/thermodynamics/>
155. Interscience Publishers, New York, "Thermodynamics with Quantum Statistical Illustrations, P.T. Landsberg, 1961
156. "Boyle's law," Wiki, [https://en.wikipedia.org/wiki/Boyle%27s\\_law](https://en.wikipedia.org/wiki/Boyle%27s_law)
157. "Ideal Gas," Wiki, [https://en.wikipedia.org/wiki/Ideal\\_gas#Ideal\\_gas\\_law](https://en.wikipedia.org/wiki/Ideal_gas#Ideal_gas_law)
158. "Joule- Thomson Effect, Wiki, [https://en.wikipedia.org/wiki/Joule%20%93Thomson\\_effect#Joule's\\_second\\_law](https://en.wikipedia.org/wiki/Joule%20%93Thomson_effect#Joule's_second_law)
159. "Newton's Laws of Motion," Wiki, [https://en.wikipedia.org/wiki/Newton%27s\\_laws\\_of\\_motion](https://en.wikipedia.org/wiki/Newton%27s_laws_of_motion)
160. "Euler's Laws of Motion, Wiki, [https://en.wikipedia.org/wiki/Euler%27s\\_laws\\_of\\_motion](https://en.wikipedia.org/wiki/Euler%27s_laws_of_motion)
161. "Faraday's Laws of Induction," Wiki, [https://en.wikipedia.org/wiki/Faraday%27s\\_law\\_of\\_induction](https://en.wikipedia.org/wiki/Faraday%27s_law_of_induction)
162. "Maxwell's Equations," Wiki, [https://en.wikipedia.org/wiki/Maxwell%27s\\_equations](https://en.wikipedia.org/wiki/Maxwell%27s_equations)
163. "Lenz's Law, Wiki, [https://en.wikipedia.org/wiki/Lenz%27s\\_law](https://en.wikipedia.org/wiki/Lenz%27s_law)

164. "Kirchhoff's Circuit Laws, Wiki, [https://en.wikipedia.org/wiki/Kirchhoff%27s\\_circuit\\_laws](https://en.wikipedia.org/wiki/Kirchhoff%27s_circuit_laws)
165. "Ampère's circuital law," Wiki, [https://en.wikipedia.org/wiki/Amp%C3%A8re%27s\\_circuital\\_law](https://en.wikipedia.org/wiki/Amp%C3%A8re%27s_circuital_law)
166. "±Water: Demonstration of Water Properties, Depending on its Electrical Potential", Y. Pivovarenko, 2018  
<http://article.sciencepublishinggroup.com/pdf/10.11648.j.wjap.20180301.12.pdf>
167. "Metrical Dimensional Relations of the Aether," E. Dollard, pulled 2018,  
<http://www.gestaltreality.com/energy-synthesis/eric-dollard/metrical-dimensional-relations-of-the-aether-by-e-p-dollard/>