Appendices

APPENDIX Introduction

The following appendices are clarifications or quotations by others regarding the concepts presented in this book. They are referred to within the publication at specific points where the ideas presented are complex and somewhat difficult to understand. Fundamentally, these additions are further explanations written mainly for the novice. Some of them were written by the author at different times, so there is considerable redundancy and some contradictions.

APPENDIX A

SRT

The following is from http://www.dummies.com/how-to/content/einsteins-special-relativity.html

”In 1905, Albert Einstein published the theory of special relativity which explains how to interpret motion between different inertial frames of reference—that is, places that are moving at constant speeds relative to each other.

”Einstein explained that when two objects are moving at a constant speed, what is important is the relative motion of the two objects, instead of appealing to the ether as an absolute frame of reference that defined what was going on. If you and some astronaut, Amber, are moving in different spaceships and want to compare your observations, all that matters is how fast you and Amber are moving with respect to each other.

”Special relativity includes only the special case (hence the name) where the motion is uniform. The motion it explains is only if you’re traveling in a straight line at a constant speed. As soon as you accelerate or curve—or do anything that changes the nature of the motion in any way—special relativity ceases to apply. That’s where Einstein’s General Theory of Relativity comes in, because it can explain the general case of any sort of motion.

”Einstein’s theory was based on two key principles:

- ”The principle of relativity: The laws of physics don’t change, even for objects moving in different inertial (constant speed) frames of reference.
- ”The principle of the speed of light: The speed of light is the same for all observers, regardless of their motion relative to the light source. (Physicists write this speed using the symbol c.)

”The genius of Einstein’s discoveries is that he looked at the experiments and assumed the findings were true. This was the exact opposite of what other physicists seemed to be doing. Instead of assuming the theory was correct and that the experiments failed, he assumed that the experiments were correct, and the theory had failed.

”In the latter part of the 19th century, physicists were searching for the mysterious thing called ether– the medium they believed existed for light waves to wave through. The belief in ether had caused a mess of things in Einstein’s view by introducing a medium that caused certain laws of physics to work differently depending on how the observer moved relative to the ether. Einstein just removed the ether

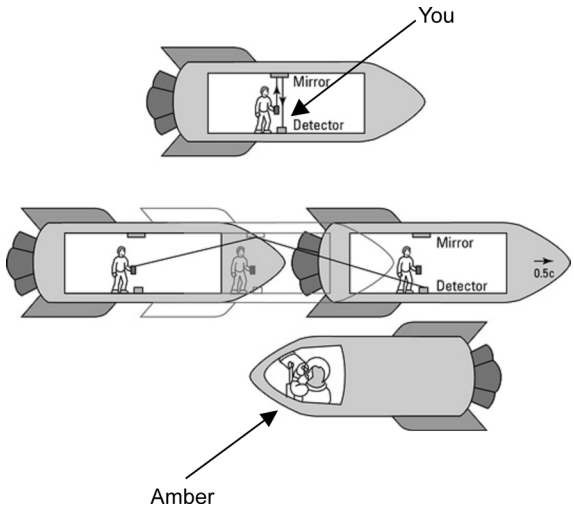
entirely and assumed that the laws of physics, including the speed of light, worked the same regardless of how you were moving—exactly as experiments and mathematics showed them to be!"

Unifying space and time

"Einstein's theory of special relativity created a fundamental link between space and time. The universe can be viewed as having three space dimensions-up/down, left/right, forward/backward, and one-time dimension. This four-dimensional space is referred to as the space-time continuum.

"If you move fast enough through space, the observations that you make about space and time differ somewhat from the observations of other people, who are moving at different speeds.

"You can picture this for yourself by understanding the thought experiment depicted in this figure. Imagine that you're on a spaceship and holding a laser so it shoots a beam of light directly up, striking a mirror you've placed on the ceiling. The light beam then comes back down and strikes a detector.



http://www.dummies.com/how-to/content/einsteins-special-relativity.htm/

Daniel Robbins

Figure A.1 Observers See Laser Beam Differently [Fair Use]

From Andrew Zimmerman Jones and Daniel Robbins, authors of String Theory for Dummies*):*

"(Top) You see a beam of light go up, bounce off the mirror, and come straight down. (Bottom) Astronaut Amber sees the beam travel along a diagonal path.

"However, the spaceship is traveling at a constant speed of half the speed of light (0.5c, as physicists would write it). According to Einstein, this makes no difference to you—you can't even tell that you're moving. However, if Astronaut Amber were spying on you, as in the bottom of the figure, i t would be a different story.

"Amber would see your beam of light travel upward along a diagonal path, strike the mirror, and then travel downward along a diagonal path before striking the detector. In other words, you and Amber would see different paths for the light and, more importantly, those paths aren't even the same length. This means that the time the beam takes to go from the laser to the mirror to the detector must also be different for you and Amber so that you both agree on the speed of light."

(If the speed of light is (c) for both observers, then time and distance must differ with respect to you and Amber in order to maintain the speed of light at c. (c) = distance/time. So, if (c) remains constant, then distance/time must change proportionally.)

”This phenomenon is known as time dilation, where the time on a ship moving very quickly appears to pass slower than on Earth.

”As strange as it seems, this example (and many others) demonstrates that in Einstein’s theory of relativity, space and time are intimately linked together. If you apply Lorentz transformation equations, they work out so that the speed of light is perfectly consistent for both observers.

”This strange behavior of space and time is only evident when you’re traveling close to the speed of light, so no one had ever observed it before. Experiments carried out since Einstein’s discovery have confirmed that it’s true—time and space are perceived differently, in precisely the way Einstein described, for objects moving near the speed of light.

Unifying mass and energy

”The most famous work of Einstein’s life also dates from 1905 (a busy year for him), when he applied the ideas of his relativity paper to come up with the equation $E = mc^2$ that represents the relationship between mass (m) and energy (E).

”In a nutshell, Einstein found that as an object approached the speed of light, c, the mass of the object increased. The object goes faster, but it also gets heavier. If it were able to move at c, the object’s mass and energy would both be infinite. A heavier object is harder to speed up, so it’s impossible to ever ever actually get the particle up to a speed of c.

”Until Einstein, the concepts of mass and energy were viewed as separate. He proved that the principles of conservation of mass and conservation of energy are part of the same larger, unified principle, conservation of mass-energy. Matter can be turned into energy and vice versa, energy can be turned into matter, because a fundamental connection exists between the two types of substance.”

From Andrew Zimmerman Jones and Daniel Robbins, authors of String Theory for Dummies):

Again, the above excerpts are taken from the website just listed, except for the statement in bold parenthesis, which is written by the author.

Einstein’s argument is logical, based upon the above key presuppositions, that the speed of light is (c) relative to observer regardless of his/her rate of inertial motion and Newtonian/Galilean physics is correct (an amalgamation of Newton and Maxwell, siding more towards Maxwell = SRT). On the other hand, it is not consistent with common-sense reality, such as the twin-paradox dilemma and the quandary of simultaneity. As above again, one key underlying principle is that the speed of light is (c) relative to the observer (c in empty space regardless of the observer’s inertial velocity), so there is no ether validated by the MMX.

If it can be demonstrated, as shown within this publication, that the MMX’s null result is also consistent with the ether’s existence, therefore, silent as to whether or not it exists, then SRT falls apart.

The first prediction: the speed of light and the demise of Newton’s mechanics

The following is from http://physics.ucr.edu/~wudka/Physics7/Notes_www/node74.html

”Now that we have stated the principle of relativity, we can examine its implications, and almost immediately we find reason to worry.

”Maxwell’s equations, the equations of electromagnetism, contain a quantity we called c, the speed of light, which is given without reference to any inertial observer. So, if we accept the principle of relativity and trust Maxwell’s equations, we must conclude that c is the same for all inertial observers. So, if Jack measures the speed of a beam of light while sitting at the top of the hill, and Jill also measures the speed of the same beam of light while running up the hill, they should get exactly the same answer, no matter how fast Jill runs. It is often said that Einstein ‘proved that everything is relative’ but, in fact, his first conclusion was that the speed of light is absolute.

”This property of light is very different from, say, the properties of peas as described by the mechanics of Newton: if a person rides on a scooter and shoots peas, these move faster than the peas shot by a person standing by (Figure A.2 top). In contrast, if the person on the scooter turns on a laser and the person standing by does the same when they coincide on the street, these two laser beams will reach Pluto at the same time (Figure A.2 bottom). This happens even if the scooter moves at 99% of the speed of light.

”The pea shot from the scooter moves faster, yet both laser beams get to Pluto at the same time.”

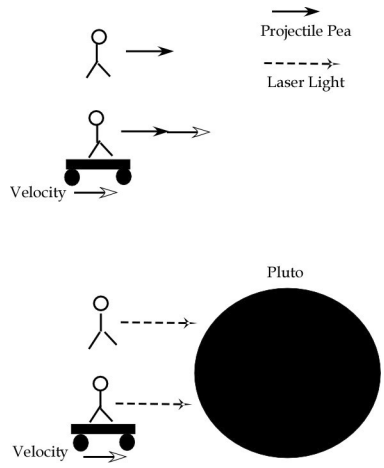


Figure A.2 Laser Light Hits Pluto at the Same Time

"Newton would be horrified by this behavior of light beams, according to his mechanics velocities so that the laser beam from the scooter should reach Pluto sooner.

"Thus, once Einstein adopted his principle of relativity, he was faced with a choice: either dismiss Newtonian mechanics or dismiss Maxwell's equations. It was impossible for them both to be right. Newton's mechanics had survived for about 250 years, it was universally accepted in the physics community, and its predictions agreed with all experiments (done up to 1905). Maxwell's equations, in contrast, were rather new, were not tested as thoroughly as Newton's, and were not universally accepted.

"Nonetheless Einstein took the daring path of siding with Maxwell and so challenged the whole edifice of the Newtonian theory. He was right.

"Having chosen sides, Einstein assumed that Newton's mechanics were not a good description of Nature under all circumstances; it must then be only a good approximation. Einstein's work was then cut out for him: he needed to find a generalization of Newton's mechanics which is consistent with the principle of relativity, and which agrees with experiments, as well as (or better than) Newton's theory. He was successful.

"Significant discrepancies between Newton's and Einstein's mechanics become noticeable only at speeds close to (c) which explains why no problems were detected with Newton's theory before 1905; all experiments were done at speeds very small compared to c. In this century, a wealth of experimental evidence has been gathered which supports Einstein's mechanics in favor of Newton's. The best examples appear in experiments done since the 1950s using subatomic particles, which are relatively easily accelerated to speeds approaching c. The behavior of such experiments completely vindicates Einstein's approach while being inexplicable from the Newtonian viewpoint.

"In conclusion, the principle of relativity, together with Maxwell's equations, imply that there is a universal speed whose value is the same to all inertial observers. This fact required several fundamental changes in the manner we understand the world."

APPENDIX B

GRT

Einstein's Special Relativity Theory (SRT) applies to only inertial linear motion, with these two basic principles. #1 and #2 are from Andrew Zimmerman Jones and Daniel Robbins authors of *String Theory for Dummies.*

1. "The principle of relativity: The laws of physics don't change, even for objects moving in different inertial (constant speed) frames of reference.

2. "The principle of the speed of light: The speed of light is the same for all observers, regardless of their motion relative to the light source. (Physicists write this speed using the symbol c.)"

However, SRT does not account for accelerated motion. As a result, Einstein added these postulates to SRT as listed below.

#3 and #4 are from http://physics.info/general-relativity/

3. "The absence of a gravitational field (true weightlessness) is indistinguishable from free fall acceleration in a gravitational field (apparent weightlessness).

4. "Accelerated motion in the absence of a gravitational field is indistinguishable from un-accelerated motion in the presence of a gravitational field. The local effects of gravity are the same as those of being in an accelerating reference frame."

In doing so, Einstein created The Theory of General Relativity (GRT). GRT is a mathematical theory, what is more, very difficult to illustrate regarding two/three-dimensions relative to four-dimensional space-time. Given below are four excerpts and illustrations, none of which adequately pictures or depicts four-dimensional space-time in terms of two/three-dimensional space. Consequently, GRT is very difficult to visualize.

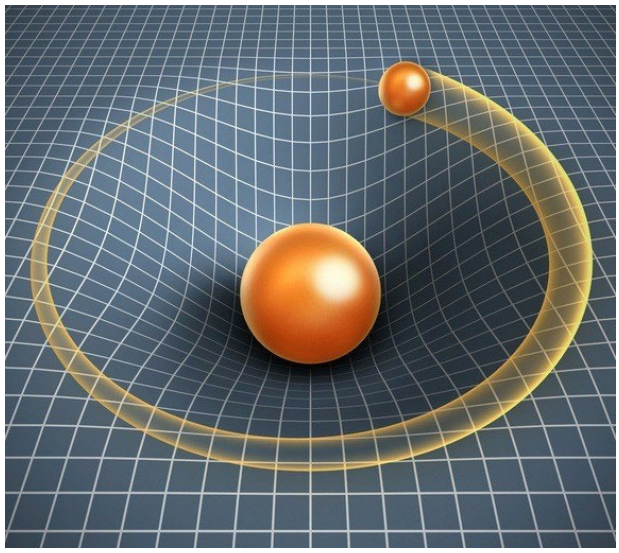


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Figure B.1 Sun Curves Space-time [Fair Use]
https://einstein.stanford.edu/SPACETIME/spacetime2.html

Albert Einstein proposed that matter curves space-time and that gravity is the curve that causes objects to deviate from traveling a straight line. The distortion causes the objects that were moving along a flat plane to fall into a spherical path.

Below is an excerpt from http://www.livescience.com/37115-what-is-gravity.html

”Einstein eventually identified the property of space-time, which is responsible for gravity as its curvature. Space and time in Einstein’s universe are no longer flat (as implicitly assumed by Newton) but can be pushed and pulled, stretched, and warped by matter. Gravity feels strongest where space-time is most curved, and it vanishes where space-time is flat. This is the core of Einstein’s Theory of General Relativity, which is often summed up in words as follows: **’matter tells space-time how to curve, and curved space-time tells matter how to move.’**

”A standard way to illustrate this idea is to place a bowling ball (representing a massive object such as the Sun) onto a stretched rubber sheet (representing space-time). If a marble is placed onto the rubber sheet, it will roll toward the bowling ball, and may even be put into ’orbit’ around the bowling ball. This occurs, not because the smaller mass is ’attracted’ by a force emanating from the larger one, but because it is traveling along a surface, which has been deformed by the presence of the larger mass.

"In the same way, gravitation in Einstein’s theory arises not as a force propagating through space-time but rather as a feature of space-time itself. According to Einstein, your weight on Earth is due to the fact that your body is traveling through warped space-time!”

Below is an excerpt from http://www.newscientist.com/special/instant-expert-general-relativity

”Albert Einstein’s General Theory of Relativity is one of the towering achievements of 20th-century physics. Published in 1916, it explains that what we perceive as the force of gravity in fact arises from the curvature of space and time. Einstein proposed that objects such as the Sun and the Earth change this geometry.

”In the presence of matter and energy it can evolve, stretch and warp, forming ridges, mountains and valleys that cause bodies moving through it to zigzag and curve. So although Earth appears to be pulled

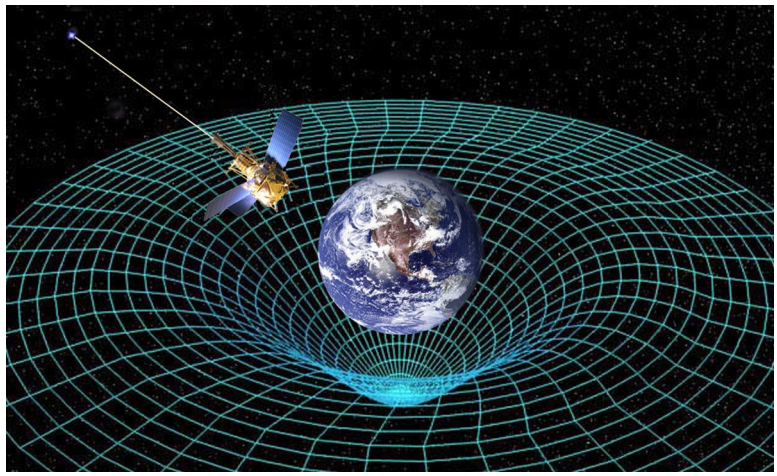
towards the Sun by gravity, there is no such force. It is simply the geometry of space-time around the Sun telling Earth how to move."

Below is an excerpt from https://www.space.com/17661-theory-general-relativity.html

"In 1905, Albert Einstein determined that the laws of physics are the same for all non-accelerating observers, and that the speed of light in a vacuum was independent of the motion of all observers. This was the theory of special relativity. It introduced a new framework for all of physics and proposed new concepts of space and time. Einstein then spent ten years trying to include acceleration in the theory and published his Theory of General Relativity in 1915. In it, he determined that massive objects cause a distortion in space-time, which is felt as gravity."

The tug of gravity

"Two objects exert a force of attraction on one another known as 'gravity.' Even as the center of the Earth is pulling you toward it (keeping you firmly lodged on the ground), your center of mass is pulling back at the Earth, albeit with much less force. Sir Isaac Newton quantified the gravity between two objects when he formulated his three laws of motion. Yet Newton's laws assume that gravity is an innate force of an object that can act over a distance. Albert Einstein, in his theory of special relativity, determined that the laws of physics are the same for all non-accelerating observers, and he showed that the speed of light within a vacuum is the same no matter the speed at which an observer travels. As a result, he found that space and time were interwoven into a single continuum known as space-time. Events that occur at the same time for one observer could occur at different times for another. As he worked out the equations for his General Theory of Relativity, Einstein realized that massive objects caused a distortion in space-time. Imagine setting a large body in the center of a trampoline. The body would press down into the fabric, causing it to dimple. A marble rolled around the edge would spiral inward toward the body, pulled in much the same way that the gravity of a planet pulls at rocks in space."



NASA

Figure B.2 Four-dimensional Space-time [Fair Use]

An example of four-dimensional space-time depicted in three dimensions.

The Principles of General Relativity

Below is an excerpt from http://www.rafimoor.com/english/GRE1.htm#Background

Background

"Once, when Einstein was preparing for a review of his (not yet called special) theory of relativity, he thought about the fact that a man falling from the roof of a building doesn't feel his own weight. This thought which he later described as 'The happiest thought of my life,' was the seed from which the theory

of General Relativity grew. The idea of general relativity is not very hard to understand. The mathematics of it is quite complicated and involves curved space geometry that is not easy to comprehend. Einstein had struggled with the mathematics of his theory for several years before he got to the correct version of his famous field equation. Though it looks quite simple, this equation actually includes ten different differential equations, and cannot be used in practice as it is. Einstein did not expect exact solutions for his equation to come soon. Surprisingly, the first solution for the equation was found by Karl Schwarzschild a few months after Einstein published his final version of the General Theory of Relativity in 1915. This solution describes the gravity field around a massive static spherical body. No other solutions were found until the sixties when new mathematical tools were developed and computers became available."

APPENDIX C

RELATIVISTIC MASS AND MAGNETIC FIELDS

Below is an excerpt from http://www.newtonphysics.on.ca/magnetic/

”Relativity theory gives a relationship predicting the increase of mass of relativistic moving particles, but no physical model has been given to describe the fundamental physical mechanism responsible for the formation of that additional mass. We show here that this additional kinetic mass is explained by a well-known mechanism involving electromagnetic energy. This is demonstrated taking into account the magnetic field generated by a moving electric charge, calculated using the Biot-Savart equation. **We show that the mass of the energy of the induced magnetic field of a moving electron is always identical to the relativistic mass Mo(g-1) deduced in Einstein’s relativity.** Therefore, the relativistic parameter g can be calculated using electromagnetic theory. Also, we explain that in order to satisfy the equations of electromagnetic theory and the principle of energy and momentum conservation, toroidal vertices must be formed in the electric field of an accelerated electron.

”Those vortices are also simultaneously compatible with the magnetic field of the Lorentz force and the well-known de Broglie wave equation. This leads to a physical description of the internal structure of the electron in motion, which is at the same time compatible with the Coulomb field, the de Broglie wavelength equation, mass-energy conservation, and with the magnetic field predicted by electromagnetic theory. That realistic description is in complete agreement with all physical data and conventional logic. The paper concludes with an application, which is a first classical model of the photon, fully compatible with physical reality, without the conflicting dualistic wave-particle hypothesis.”

Fundamental Nature of Relativistic Mass and Magnetic Fields–Paul Marmet.

APPENDIX D

MMX

The Earth-Centered Nonrotating Inertial Frame and the Michelson-Morley Experiment

Appendix D posits that the Earth's gravitation field/Earth-centered nonrotating inertial frame/inflow of space is the local preferred frame for the speed of light on Earth's surface, and that the speed of light within this frame is c.

The original Michelson-Morley experiment (MMX) searched for an ether wind equivalent to the Earth's orbital velocity around the Sun, (63,000 mph) but not the Earth's rotating axial spin velocity (max 1,000 mph). As a result, the original MMX was either not sensitive enough to identify this axial spin velocity, or else it was inherently incapable of detecting the ether wind. Appendix D is meant to explain the function of the original MMX or how it is presumed to work, assuming a true ether wind.
→This appendix only explains the classical interpretation of the MMX←. However, this article ignores the fact that compensatory anti-symmetry/anti-asymmetry, involving the two returning light waves traveling in opposition at the location of half-silvered mirrored, where the interference pattern actually forms, then renders the MMX →relatively (but not absolutely)← silent as to whether or not the ether exists →as compared to when classically performed/interpreted←.

Introduction

This manuscript hypothesizes that the Earth-centered nonrotating inertial frame/gravitational field/inflow of space is the local preferred frame for the speed of light on Earth. Everything else depicted in this appendix derives from this basic assumption. Additionally, keep in mind that all three terms are synonymous. Furthermore, it should be noted that the term "inflow of space" is new and not generally accepted in mainstream physics. For ease of understanding, generally, although within this appendix not exclusively, the author will use the phrase "Earth-Centered Nonrotating Inertial Frame" (ECF).

The Michelson-Morley experiment does not directly measure the velocity of light; it measures interference patterns. From the reference frame of the central light-receiving detector or observer, it evaluates how two wavefronts merge and interact with one another, resulting in an interference pattern. It also measures the total number of wavelengths of light within one arm compared to the other arm. From these measurements, (time = distance) then allegedly, if a true ether wind exists, we indirectly derive the distance that the light travels through the ether with respect to each arm.

Presuming that within the ECF, the speed of light is c, then any speed-of-light experiment performed on Earth, parallel to its surface and not rotating with it, will measure the speed of light as isotropic.

In contrast, any speed-of-light experiment carried out on Earth, parallel to its surface, while rotating with it, will measure the speed of light as anisotropic. The Sagnac effect, the GPS system, time delay with geosynchronous satellites, and diurnal stellar aberration can all be used to support the postulate that the Earth-centered nonrotating inertial frame/inflow of space/gravitational field is in fact the local preferred frame for the speed of light.

The Sagnac Effect

If you spin a Sagnac experiment within the ECF, it will have a rotational velocity relative to this frame. Consequently, if two light beams are sent in opposite directions around the periphery of the rotating experiment, then the distances that the beams travel through this preferred frame are asymmetrical. This produces a fringe shift for the duration of rotation. This model explains the Sagnac effect and is consistent with the postulate that the ECF/gravitational field/inflow of space is the local rest frame for the speed of light.

The GPS System

With respect to the mathematical calculations of the GPS system, to find the exact location for an object placed on the rotating surface of the Earth, one must include both the object's velocity at its latitude relative to the ECF as well as the orbital velocities of the GPS satellites, again relative to ECF. Recognize this explanation (c) is not relative to the observer but rather ONLY the ECF (nonrotating gravitational field). This outcome is irreconcilable with Einstein's SRT, whereby the speed of light is relative to **only** the observer (c constant in empty space regardless of the observer's inertial motion). In effect, the GPS system presumes the speed of light (c), as well as the synchronization of the atomic clocks, are relative to **only** the ECF Otherwise, the system will not function accurately. Once again, this observation is consistent with, and perhaps proof that, the Earth-centered nonrotating inertial frame is the local rest frame for the speed of light.

Time Delay with Geosynchronous Satellites

Scientists have observed that the amount of time (speed of light) it takes for radio waves to travel from Japan to the United States via a geosynchronous satellite is greater than those waves transmitted in the reverse direction. The difference corresponds to the Earth's rotational spin velocity at the latitude of the experiment. Yet again, this experiment is consistent with the postulate that the ECF/gravitational field/inflow of space is the local rest frame for the speed of light.

Annular and Diurnal Stellar Aberration

http://www.americanantigravity.com/

”If you watch the stars (using the necessary equipment) over the course of a year, you’ll note that they move about in little ellipses. The paths of the stars over the poles (or more precisely, above the plane of the Earth’s orbit) will be almost circular, while the paths of those near the equator will be flat. This effect is called **annular** stellar aberration. Unlike parallax, this affects all stars equally, no matter what their distance.

”You’ll note that annular stellar aberration affects all stars, so this effect is different from parallax. Since it equally affects stars that are at any distance from the solar system, and since the effect varies with a star’s distance from the Earth’s orbital plane (an imaginary plane that intersects with the Earth’s orbit), then we know that this effect is somehow due to the Earth’s motion as it goes around the Sun each year.

”Annular stellar aberration is the effect well-known by astronomers to cause stars to shift 20.5 arc seconds in their location in the sky. The amount of apparent positional change is governed by the time of year and location in the sky with regard to the Earth’s orbit around the Sun. The number also mathematically correlates perfectly with the Earth’s speed around the Sun compared to the speed of light.

”If you understand relativity, you should have immediately picked up that light between an emitter and an observer should have no relation with some third object. Yet we find annular stellar aberration is perfectly related to a third object: Our speed with respect to the Sun. They have picked the Sun as the center of a preferential reference frame and have no idea why they did it.” (website anti-relativity - no author)

In the same way, the Earth is also the center of a preferred reference frame for the speed of light. It fixes the speed of light relative to a nonrotating Earth. This is defined as the Earth-centered inertial nonrotating frame/Earth’s gravitational field. For ease of comprehension and visualization, this can also be recognized as the inflowing-space model. The essence of this model is this: the nonrotating inflow of space is towards Earth. Essentially, the Earth captures, holds onto, and drags its surrounding ether as it pulls space into itself (a form of entrainment). As a result, it fixes the direction of the starlight relative to the nonrotating Earth (preferred frame). Accordingly, any speed-of-light experiment performed on the Earth’s surface, perpendicular to the inflow of space, and not revolving with the Earth, will observe the speed of light as isotropic.

Therefore, starlight viewed from an observer rotating with the surface of the Earth will exhibit **diurnal** stellar aberration akin to **annular** stellar aberration. This is because the starlight’s direction is fixed within the Earth-centered fixed frame. The observer, who is rotating on the surface of the Earth, also within this fixed frame, then possesses a cyclical changing velocity and angle relative to the direction of that starlight. For that reason, he/she will observe diurnal stellar aberration.

→It is important to note that annular stellar aberration can be explained if one assumes that the Sun’s gravitational field fixes the velocity of light relative to itself, while diurnal stellar aberration can be explained if one presumes that the Earth’s gravitational field fixes the velocity of light relative to itself←. Both annular and diurnal stellar aberrations mandate a preferred frame. Once more, diurnal stellar aberration is consistent with the postulate that the Earth-centered nonrotating inertial frame (inflow of space) is the local rest frame for the speed of light.

Definitions and Assumptions

Assume a theoretical MMX is carried out at the Earth's equator, initially with one arm oriented eastwards in the direction of the Earth's rotational spin, while the other arm is oriented northwards, perpendicular to the Earth's rotational spin. Imagine that this experiment is placed within three separate reference frames as portrayed below (Figure D.1).

- The Earth-centered nonrotating inertial frame is the local rest frame for the speed of light on Earth (zero mph relative to the ECF).
- Coordinate System A is located at the Earth's equator, moreover, at rest with the Earth's rotating surface (1,000 mph relative to the ECF).
- Coordinate System B is located at the Earth's equator, furthermore, aboard an airplane traveling eastward at 600 mph. (1,000 mph from Earth's rotation + 600 mph from the plane = 1,600 mph relative to the ECF).

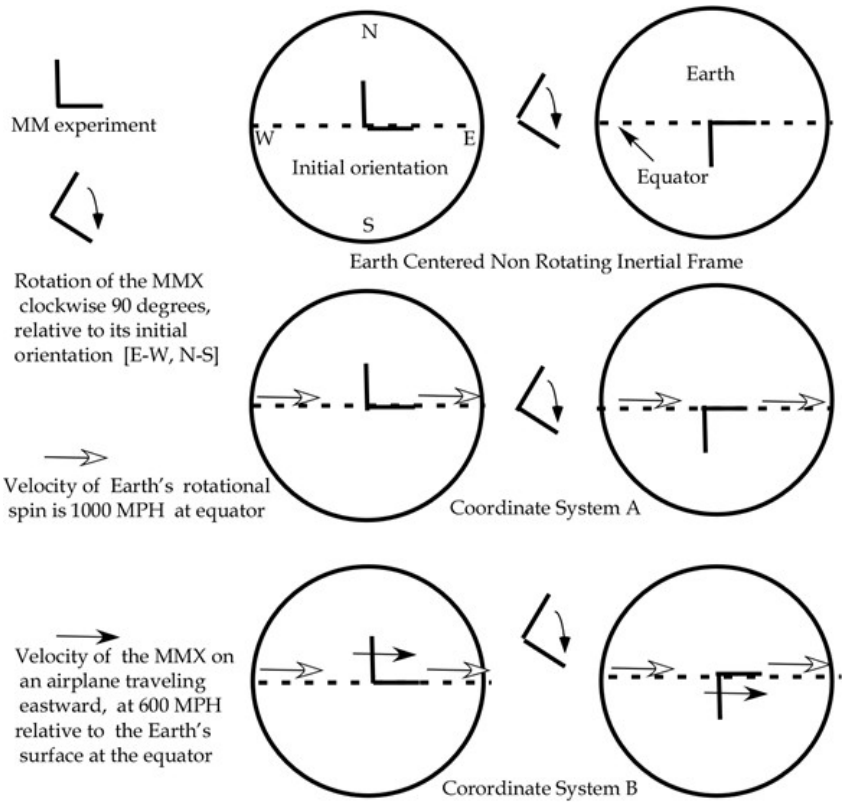


Figure D.1 Three Separate Reference Frames

Arms initially oriented east-west and north-south and then rotated clockwise.

Top. Earth-centered nonrotating inertial frame (the ether) is the rest frame for the speed of light. MMX is located at the equator, furthermore, at rest with the ether (ECF).

Middle. Coordinate System A = MMX located at the equator, moreover. in synchrony with the Earth's rotating surface. As a result, the MMX possesses an eastward velocity of 1,000 mph relative to the ether.

Bottom. Coordinate System B = MMX located at the equator aboard an airplane traveling eastward at 600 mph with respect to the rotating surface of the Earth. Therefore, the MMX possess a velocity of 1,600 mph relative to the ether (600 mph + 1,000 mph).

Method for the Explanation of the New Theory

1. Review of the classical interpretation of the MMX.
2. The MMX described as a function of the ECF (Earth's gravitational field), furthermore, the rationale for why the experimental findings are null.
3. Discussion of the Kennedy Thorndike Experiment (KTX).

Classical Interpretation of the MMX

Listed below is the classical interpretation of the MMX by Michael Fowler, Ph.D. (notations in brackets are the author's.)

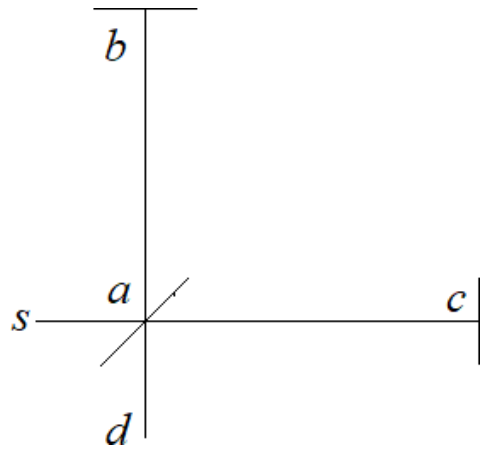


Figure D.2 Classical Interpretation [Fair Use]

The source of light is at s, the 45-degree line is the half-silvered mirror, b and c are mirrors, and d is the observer.

The horizontal axis is west-east and east-west; the vertical axis is south-north and north-south; speed = 1,000 mph relative to the ether (Earth-centered nonrotating inertial frame). (From the Michelson-Morley article in the American Journal of Science No. 203. November 1887)

1. "The scheme of the experiment is as follows: a pulse of light is directed at an angle of 45 degrees at a half-silvered, half-transparent mirror, so that half the pulse goes on through the glass, half is reflected. They both go on to distant mirrors, which reflect them back to the half-silvered mirror. At this point, they are again half-reflected and half-transmitted, but a telescope is placed behind the half-silvered mirror (as shown in the Figure D.2) so that half of each half-pulse will arrive in this telescope. Now, if there is an aether wind blowing, someone looking through the telescope should see the halves of the two half-pulses to arrive at slightly different times, since one would have gone more upstream (west-east) and back, one more cross stream (south-north) and back." (The wave from west-east and back would travel a longer distance (time) than the wave from south-north and back). "To maximize the effect, the whole apparatus, including the distant mirrors, was placed on a large turntable so it could be swung around."
2. "Michelson sent in (utilized) a steady beam of light of a single color. This can be visualized as a sequence of ingoing waves, with a wavelength one fifty-thousandth of an inch or so. This sequence of waves is split into two and reflected back as previously described. One set of waves goes upstream and back (northward and then southward (a, b then b, a). The other set of waves goes cross-stream and back (eastward and then westward (a, c then c, a).

"Finally, they come together into the telescope and the eye (d). If the one that took longer is half a wavelength behind, then its troughs will be on top of the crests of the first wave; thus they will cancel, and nothing will be seen. If the delay is less than that, then there will still be some dimming.

”However, slight errors in the placement of the mirrors would have the same effect. This is one reason why the apparatus is built to be rotated. On turning it through 90 degrees, then the upstream, downstream, and the cross-stream waves exchange places (east-west waves through the ether wind and the north-south waves through the ether wind). Now the other one should be behind. Thus, if there is an aether wind, if you watch through the telescope while you rotate the turntable, you should expect to see variations in the brightness of the incoming light.”

Assume the existence of the ether wind relative to Coordinate System A and **presume identical physical length of the arms**. Accordingly, after 90 degrees of rotation, the east-west arm and the north-south arm will have, in effect, exchanged places. As a consequence, these two interference patterns, separated by 90-degrees of rotation, are symmetrical mirror images of one another, and as such, are identical, although still mirror images. Assuming the reality of the ether, presuming the experiment is performed at a velocity relative to the ether. Presuming Michael Fowler’s traditional representation is accurate, then during rotation it will be impossible for one not to identify a variation in intensity, as the two interference patterns trade places with one another.

To clarify this model, picture in your mind two overlapping, vertically oriented metal grates that are not completely superimposed upon one another. Now imagine they subsequently exchange places. In order to accomplish this exchange, they will have to move in opposite directions (e.g., one will move to the left while the other will move to the right). Therefore, before the exchange is complete, they will superimpose.

If the metal grates →are somewhat analogous← to light waves, as described in the classical MMX, then during rotation, the two grates will continually move back and forth relative to each other in 90-degree intervals throughout 360 degrees. Similarly, during rotation—with respect to the classical MMX interpretation, at the position of the interference pattern—there will be a continuous back-and-forth shifting of the east-west wave relative to the north-south wave. This process produces a continually changing alternating interference pattern, somewhat analogous to the metal grate illustration. What’s more, this function is the result of the relative changing distances of light traveling through the ether (time) within the two arms, which occurs during rotation. See the Michelson-Morley original article, The *American Journal of Science* No. 203. November 1887, page 340, as illustrated below.

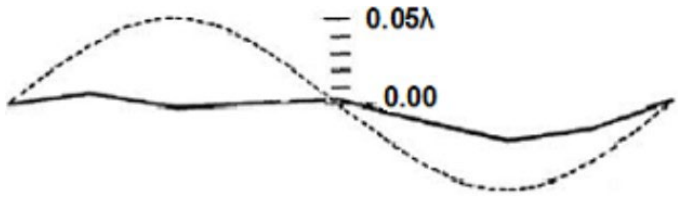


Figure D.3 Graph of the Expected Theoretical Displacement [Fair Use]

This illustration is found in the original Michelson-Morley article in the American Journal of Science *No. 203. November 1887.*

Figure D.3 illustrates, presuming the existence of the ether wind, a graph of the expected theoretical displacement of the interference patterns throughout 360 degrees of rotation, which is represented by the larger sinusoidal dotted line. In future discussions, this graph will be defined as the **sinusoidal-shaped curve pattern**.

This sinusoidal-shaped curve pattern, if observed, is the evidence of the ether wind. Alternatively, relative to the ECF, a single interference pattern as a function of only one direction is not proof, because a single interference pattern could be related to just unequal physical length of the arms. The sinusoidal-shaped curve pattern is only observed during rotation, in the presence of the ether wind. However, this sinusoidal pattern has never been detected. What physicists have found is a constant unchanging interference pattern, incompatible with the ether wind, though consistent with the no-ether theory.

Rotation of the MMX

Assume Coordinate System A in the initial N-S and E-W orientation (Figure D.4). For the initial 90 degrees of rotation, the sum of the continuous increase in the number of wavelengths (distance) within one arm is equal to the sum of the continuous decrease in the number of wavelengths within the other arm. However, one must keep in mind that the anti-symmetry in the subsequent 90 degrees of rotation reverses the changes in the first 90 degrees of rotation. This reversing anti-symmetrical process repeats itself in 90-degree intervals throughout 360 degrees at which time the experiment is then at its original position. For simplicity, within this article, the author will only describe the anti- symmetry of the first 90 degrees of rotation.

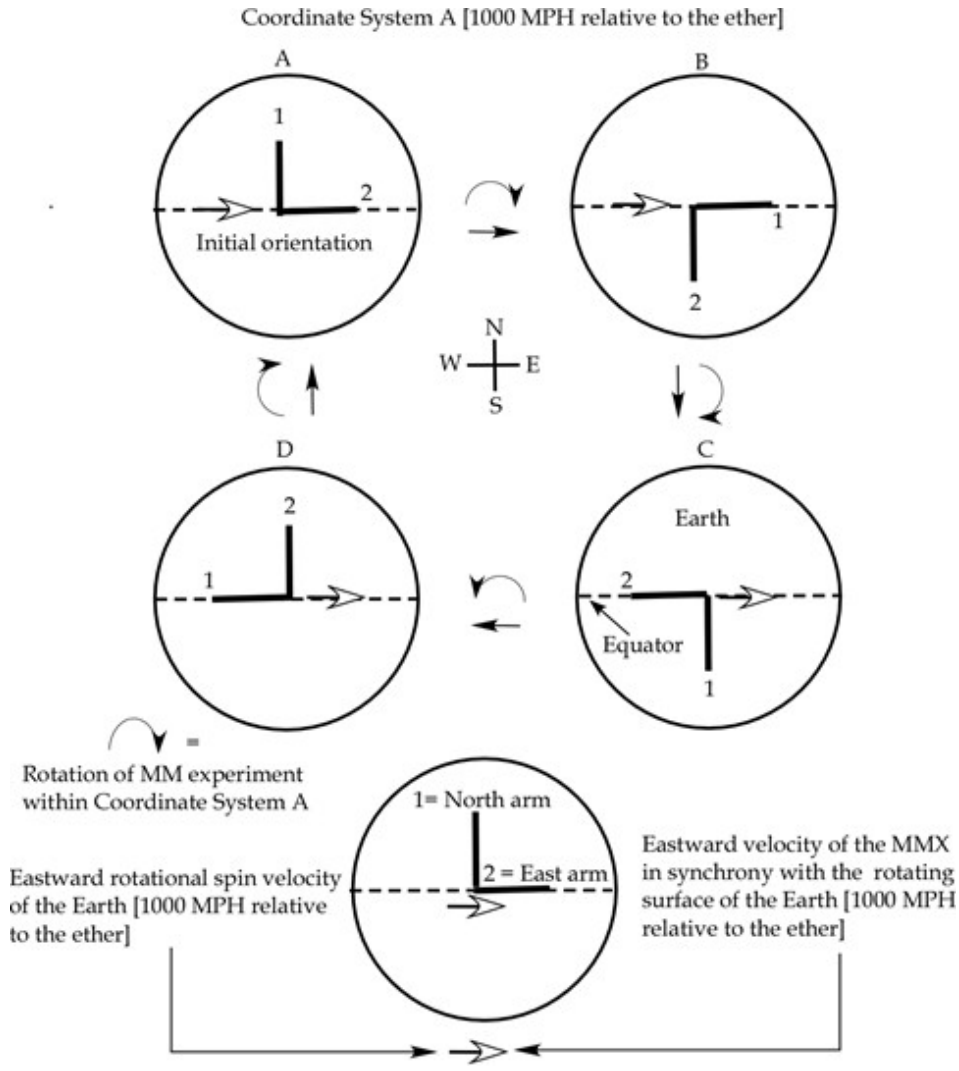


Figure D.4 Coordinate System A

Initial orientation is (E-W and N-S) relative to the ether. Therefore, the total number of wavelengths within arm 2 is greater than within arm 1.

- *A to B–symmetrical gain of wavelengths of 1 versus the loss of wavelengths of 2 (summed over 90 degrees).*
- *B to C—symmetrical loss of wavelengths of 1 versus gain of wavelengths of 2 (summed over 90 degrees).*
- *C to D-–symmetrical gain of wavelengths of 1 versus loss of wavelengths of 2 (summed over 90 degrees).*
- *D to A-–symmetrical loss of wavelengths of 1 versus gain of wavelengths of 2 (summed over 90 degrees).*

Mirrors

Each reflection from a mirror shifts a light wave 180 degrees out of phase with respect to the original light beam. However, from the reference frame of the interference pattern, symmetry from all of the mirrors negates any overall change.

- The beam splitter shifts the outgoing S-N wave one-half wavelength out of phase. The outgoing W-E is unaffected.
- The peripheral mirrors will shift both waves one-half wavelength out of phase.
- The beam splitter shifts the incoming E-W wave one-half wavelength out of phase. The incoming N-S wave is unaffected.

As a result, at the location of the interference pattern, each light wave will have undergone 2X (one-half wavelength) change in phase. Therefore, from the reference frame of the observer (d) there will be no change in the phase of the light waves from only the mirrors.

MMX in Earth's Gravitational Field or the ECF

The author will now describe the classical MMX with respect to the three hypothetical coordinate systems. The experiment is initially orientated (E-W and N-S) at the Earth's equator. →Furthermore, again assume equal physical arms←. (See figures D.1, D.4, and D.5.)

Earth-Centered Nonrotating Inertial Frame (The Ether)

Imagine we perform an MM experiment at the equator, moreover, at rest in the Earth-centered non-rotating inertial frame (the ether), thus not rotating with the Earth. In this frame, the total number of wavelengths within one arm is precisely equal to the total number of wavelengths within the other arm. Consequently, if you rotate this experiment, 360 degrees, there is no change of the in-phase interference pattern.

Coordinate System A

Envision that we carry out an MM experiment at the equator, what's more, at rest with the rotating surface of the Earth (Coordinate System A). Relative to the ether, the experiment possesses an eastward velocity of 1,000 mph. As a result, initially the total number of wavelengths within the east-west arm is greater than the total number of wavelengths within the north-south arm. Next, assume the apparatus is rotated 90 degrees clockwise. Accordingly, during this rotation summed over 90 degrees, the total number of wavelengths (distance) within the north-south arm exchanges places with the number total number of wavelengths within east-west arm.

Essentially, the gain in the number of wavelengths within the north-south arm is equal to the loss of number of wavelengths within the other arm. In addition, when both arms are oriented 45 degrees relative to the direction of the ether wind, then in this position, the total numbers of wavelengths (distance) within the arms are equal to each other. Notice, at this location the waveforms are in phase; however, at 0 degrees and 90 degrees they are out of phase. For that reason, if the experiment is rotated 360 degrees, the displacement pattern takes the form of a sinusoid.

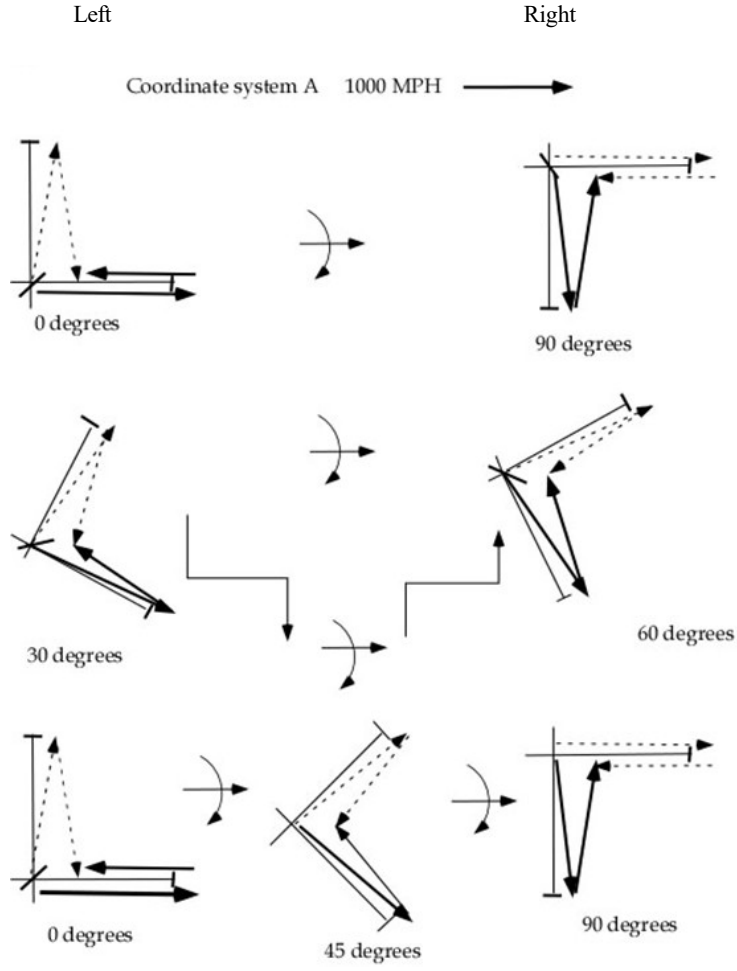


Figure D.5 Coordinate System A - Rotation from Left to Right
During rotation from left to right (→summed over 90 degrees←)

1. The dotted distance exchanges places with the solid distance (→summed over 90 degrees←).
2. The total number of wavelengths within the dotted arm exchanges places with the total number of wavelengths within the solid arm (→summed over 90 degrees←).
3. The gain in the number of wavelengths within the dotted arm is symmetrical with the loss in the number of wavelengths within the solid arm (→summed over 90 degrees←).

Coordinate System B

Suppose that an MMX is carried out at the equator, aboard an airplane traveling eastward at 600 mph (Coordinate System B). Relative to the ether, the experiment possesses an eastward velocity of 1,600 mph (1,000 mph + 600 mph). Again, initially, the total number of wavelengths (distance) within the east-west arm is greater than the total number of wavelengths within the north-south arm. But when compared to Coordinate System A, there is now a **greater ratio** in the total number of wavelengths within the east-west arm compared to the north-south arm. Now assume the apparatus is rotated 90 degrees clockwise. During this rotation summed over 90 degrees, the total number of wavelengths within the north-south

arm exchanges places with the total number of wavelengths within the east-west arm. Or the gain in the number of wavelengths within the north-south arm is equal to the loss of number of wavelengths within the east-west arm. What is more, when both arms are oriented 45 degrees relative to the direction of the ether wind, then at this location, the total numbers of wavelengths (distance) within the arms are equal to each other. Also notice, at this position, the waveforms from the arms are in phase, yet at 0 degrees and 90 degrees, they are out of phase. As a consequence, if the experiment is rotated 360 degrees, the displacement pattern will take the form of a sinusoid.

Furthermore, this sinusoid-shaped wave pattern has a different contour compared to Coordinate System A. This is because when the MMX is positioned within Coordinate System B, there is a different ratio of the total number wavelengths within its arms compared to if located in Coordinate System A.

Within all three coordinate systems, there is either no interference pattern (ECF, equal physical arms) or a specific sinusoidal-shaped wave pattern for each frame (A different from B). The MMX and all analogous experiments have been performed at fixed latitude and in synchrony with the rotating Earth's surface. For that reason, they are at a constant rotational spin velocity with respect to ECF, making the maximum detectable anisotropy for the velocity—1,000 mph at the equator.

In addition, between different coordinate systems, there will be an asymmetrical gain in the number of wavelengths within one arm compared to the other arm.

Consequently, the appearance of the sinusoidal-shaped curved pattern would be dissimilar between frames. The following scenario will depict this concept more precisely. Envision a theoretical MMX located within the Earth-centered nonrotating inertial frame (0 mph) with its arms oriented and **fixed** in the east-west and north-south directions.

Then presume, by initiating an eastward velocity, we transport the device, without rotation, from the Earth-centered frame into Coordinate System A (1,000 mph). Following this transformation, there will be an increase in the number of wavelengths within the east-west arm, as well as the north-south arm, compared to the Earth-centered frame. Nevertheless, the increase will be greater within the east-west arm compared to the north-south arm. This asymmetrical change in the number of wavelengths within the arms, which occurs within one coordinate system versus a different coordinate system, is the explanation for the alteration in the appearance of the interference pattern between those frames.

Given these assumptions, then the experimental results of the MMX are null because:

1. The classical MMX does not have the sensitivity to detect an ether wind corresponding to the Earth's rotational spin velocity (1,000 mph or less).

2. **The MXX is inherently incapable of detecting the ether wind as classically performed/interpreted as postulated by the book titled *The Ether* (anonymous–Ramsey)**.

3. The MMX, as well as some of the other analogous speed of light experiments, have only attempted to measure the Earth's orbital velocity around the Sun or else the Earth's velocity relative to the isotropy of the microwave background radiation rather than the Earth's rotational axial spin velocity.

The Kennedy-Thorndike Experiment

In reality, it is impossible to construct an MMX such that the physical lengths of the arms are perfectly equal relative to a single wavelength of light; there is always a slight physical asymmetry. In principle, it is this asymmetry that makes a Kennedy-Thorndike speed of light interferometer. With physical asymmetry, in the initial position (EW/NS–Earth-Centered Frame), the total number of wavelengths in one arm differs from the other arm. This produces a **specific** out-of-phase interference pattern. Nevertheless, within the Earth-centered, nonrotating inertial frame, if this device is rotated 360 degrees there is no fringe shift.

Imagine that this same apparatus now has a velocity with respect to the ECF (Coordinate System A), yet again, in the initial orientation. So compared to the ECF, this will change the ratio of the total number of wavelengths of light in one arm versus the other arm. In essence, there will be an asymmetrical gain in the number of wavelengths within one arm relative to the other arm, as compared to the ECF.

Therefore, if the device is rotated 360 degrees, the displacement pattern will take the form of a sinusoid. With respect to Coordinate System A, the interference pattern is a function of both the asymmetrical physical length of the arms as well as the velocity of the device relative to the ether wind, which is 1,000 mph eastward. Nevertheless, only the later process is the source for the sinusoid pattern. Therefore, the

Kennedy-Thorndike Experiment is analogous to the MMX. **What is more, the experiment outcome is null, for exactly the same reason as just described for the MMX.**

→It should be emphasized that the classic MMX is, in fact, a Kennedy-Thorndike, experiment, because in practicality the physical length of the arms is always unequal relative to a single wavelength of light. It is when the physical lengths of the arms are different enough to be noticeable, that we then define it as the Kennedy-Thorndike experiment. So, in fact, all Michelson-Morley experiments are actually Kennedy-Thorndike experiments←.

Possible Experimental Demonstration of the Ether with Respect to Two Different Reference Frames

Assume the MMX is inherently capable of detecting a true ether wind and equal physical length of the arms. Consequently, within each of the separate coordinate systems, during 360 degrees of rotation, there will be either a given sinusoidal pattern (A and B) or else no interference pattern (Earth-centered frame). However, the interference pattern will vary between coordinate systems. For instance, if we carry out a MMX on the rotating surface of the Earth and then aboard an →eastward← traveling plane at the same latitude, there will be different-shaped sinusoidal patterns between these two frames.

Alternatively, if we perform the experiments first at the equator, at rest with the rotating surface of the Earth, 1,000 mph relative to the ether and then at the South Pole, 0 mph relative to the ether, then once again, there will be a disparity in the shape of the interference patterns between these two frames. In summary, for both scenarios, there will be a transformation in the shape of the interference curve pattern between two separate coordinate systems, which, if observed, is a confirmation of the ether wind.

Conclusion

This appendix postulates that the Earth-centered nonrotating frame (gravitational field/inflow of space) is the local rest frame for the speed of light. Furthermore, it implies that →as classically performed/-interpreted←, the MMX has a low sensitivity which cannot detect a 1,000 mph ether wind, causing it to consistently produce a null result. Besides this, experimenters were not even looking for the Earth's rotational spin velocity.

Alternatively, the MMX may be inherently incapable of detecting the ether wind →as classically performed/interpreted←, which is the assumption of this book titled *The Ether*. This subject matter is described in Chapter 3 of this book.

APPENDIX E

THE STRUCTURES OF THE ATOM AND ELECTROMAGNETIC RADIATION AS A FUNCTION OF THE ETHER

This new model posits that both matter and electromagnetic radiation (EMR) consist of only electric and magnetic fields. Moreover, they are both derived from and are structures of the ether. It also uses the presumption of the ether to create a modified Bohr model of the atom, analogous to QMs electron cloud model. In other words, as shown in Figure E.1, the classic Bohr Model on the left is transformed into the QM model on the right, which, in reality, is a modified Bohr model. Additionally, this appendix illustrates how this new model of the atom and EMR are both a function of the quantum nature matter and energy.

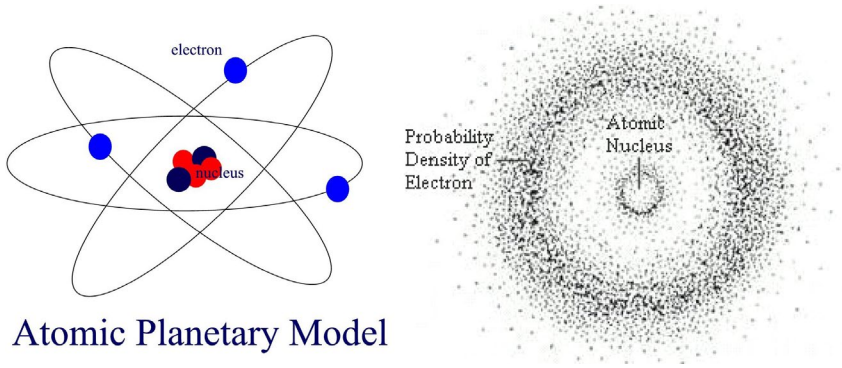


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Figure E.1 Bohr Model and the QM Cloud Model [Fair Use]

In order to give explanation to the last postulate, this theory assumes the following six attributes.

1. Matter (electrons, protons etc.) is derived from electromagnetic radiation, which is a wave of the ether. Moreover, when given the proper circumstances, this wave instead of traversing linearly through space (ether) at c, curls and spins upon itself, thus transforming into matter (charged particles). This includes positively charged protons, as well as negatively charged electrons, which then attract one another.

2. An electron is made up from only electric and magnetic fields, again structures of the ether. In addition, neither field exists at a precise central location with respect to space. In theory, these fields could extend to infinity, although this may not, in fact, be true. Regardless, the electron's two types of fields are spread out over a volume.

3. When an electron and proton attract, due to their opposing electric fields, to form an atom, moreover orbit one another, their magnetic fields also interact in a very complex manner. Bear in mind, the magnetic fields generated by protons (quarks) are considerably weaker compared to the magnetic fields generated by electrons. Nevertheless, the equal opposing electron's spins within orbital shells generate opposite repelling/attracting magnetic fields. And the opposing proton's spins within the nucleus produce repelling/attracting magnetic fields as well. As a result, an atom consists of a complex interaction of all of its electric and magnetic fields/forces, which are in a stable state of equilibrium.

4. An electron (or electrons) does not orbit the proton (nucleus) analogous to the way a planet orbits the Sun. Instead, it orbits in a "rapid, random-like" pattern. In addition, recall as above, an electron is constructed from only electric and magnetic fields. As a result, neither field is located at a precise location with respect to space, rather only a region.

5. Given these two attributes of rapid random motion and lack of locality, then integrated over a short period of time, as an electron orbits the nucleus, it forms a cloud-like pattern, analogous to the quantum mechanics model of the atom.

6. Assuming the electron has no precise point location with respect to space (field of the ether), nor does it possess a specific orbital path, rather only rapid, random-like orbital motion, then one can only determine a probability of the electron's location, seeing as it is spread out over a region. What is more, experimentally, one can determine only a probability of its velocity (momentum), since it travels too fast to accurately measure. Namely, mathematically, one cannot simultaneously determine the exact position and the exact velocity (momentum) of the orbiting electron = QM.

By using these attributes, the classical Bohr Model transforms into the modified Bohr Model, which is analogous to the cloud model of QM. For that reason, this new model of the electron is consistent with QM. But, most importantly, it is a function of the ether.

This new theory posits that the complex interacting fields of the proton and electrons are in a stable state of equilibrium. This produces an atom, since this is what holds its constituents together. In addition,

different elements are associated with their own individual stable states. Furthermore, the stable configurations for some elements are extremely complex. Accordingly, as depicted in Figure E.2, the equilibrium points for some of the elements can form odd configurations, such as a donut or a bar bell, once again just like QM. Incidentally, the different de Broglie wavelengths of the orbiting electrons are also a part of the stable equilibrium state.

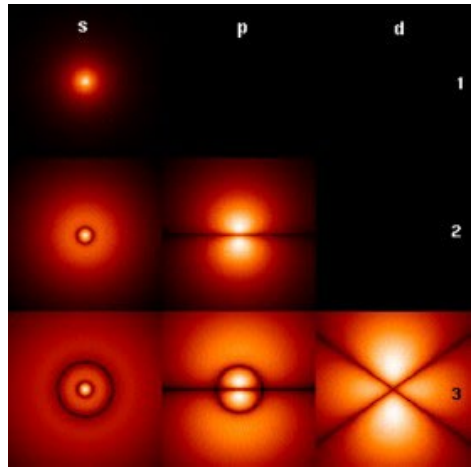

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Figure E.2 Equilibrium Points Show Donut or Bar Shape [Fair Use]

Fundamentally, as shown above, different elements are associated with dissimilar stable equilibrium points, which are represented by diverse configurations of their complex interacting electric and magnetic fields. Once more, this concept is consistent with QM.

In the same way, molecules, as well as other larger structures, including the magnetic domains of a permanent magnet, are also stable equilibrium points involving large numbers of atoms. This same model is applicable to protons, neutrons, and quarks. For example, each subatomic unit of the nucleus possesses its own electric field, magnetic field, as well as the strong and weak force fields. All these complex fields (forces) interact with one another to form the nucleus, again only relative to a specific equilibrium state. →This makes more sense if one assumes that the quarks orbit each other, or alternatively, the protons and neutrons orbit one another←. In effect, these stable configurations associated with different numbers of protons, neutrons, or alternatively, quarks represent the nuclei of the different elements.

However, some elements decay into other elements. So in this specific instance, the equilibrium configuration for that type of atom is not absolutely stable over time. For example, generally, the complex interacting fields produced by all the subatomic units are stable. Nevertheless, on a rare occasion, as they interact, the total configuration becomes unstable. When this occurs, a subatomic unit, a photon, or both is/are ejected from the nucleus. Simultaneously, the remaining nuclear subatomic units rearrange themselves to form new stable equilibrium configurations. Once again, this concept is consistent with QM.

The main points to take home with respect to this appendix vis-á-vis matter (particles) and energy (EMR):

1. They are a product of the ether.
2. They are interchangeable with the ether.
3. They self-assemble to form an equilibrium, e.g., atom.
4. They produce what is perceived as quanta, because of their equilibrium states and interactions.

APPENDIX F

THE STRUCTURE AND FUNCTION OF RAIL-GUNS

There are numerous articles, which posit that the physics of railguns is consistent with Newton's third law. In contrast, other scientific papers state that the recoil of a railgun can be absent or else markedly reduced, and, as a consequence, incompatible with Newton's third law.

In order to comprehend the function of a railgun, knowledge of the following basic principles is paramount. First, is the production of a magnetic field by a current. And the second is the Lorentz force produced by the interaction of a current with a magnetic field. They are revealed below in figures F.1 and F.2.

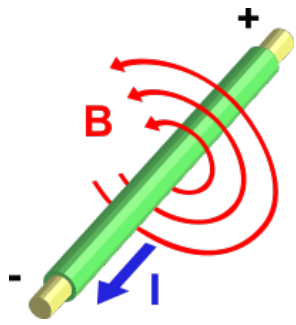

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Figure F.1 Magnetic Field Produced by + Current [Fair Use]

Current (I) through a wire produces a magnetic field (B) around the wire. The field is oriented according to the right-hand rule.

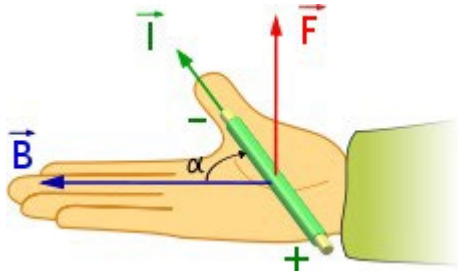

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Figure F.2 Lorentz Force Defined by Right-Hand Rule [Fair Use]

Right-hand rule for a + current-carrying wire in a magnetic field B.

Now please refer to Figure F.3 below.

Railgun with a Breech

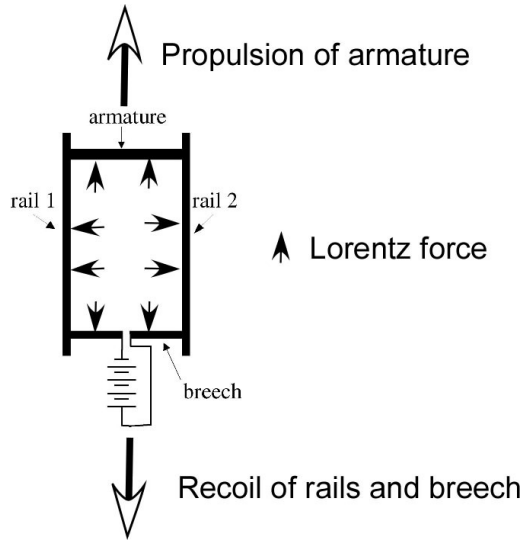


Figure F.3 Lorentz Forces Produced by Railgun

Figure F.3 depicts a closed-circuit railgun with a current. Observe the current produces a magnetic field (Figure F.1). Subsequently, the magnetic field interacts with its own induced current to produce net Lorentz forces (Figure F.2). The black arrows denoted in Figure F.3 represent the direction of Lorentz forces as a function of figures F.1 and F.2.

Regarding this model (Figure F.3) the Lorentz force exerted on the armature is equal to the Lorentz force on the breech, however, in the opposite direction. In addition, the Lorentz force directed against fixed rail 1 is equal to the Lorentz force upon fixed rail 2, again, in the opposing direction. Now, given that the rails are attached to each other, they remain immobile relative one another.

So, during the time of the current, when the armature is propelled forward, there is a reverse recoil force located at the breech which then pulls the attached rails backwards along with its own motion. The physics just described is consistent with Newton's third law. For that reason, this form of railgun, containing a closed breech, cannot be used for overall propulsion without a propellant.

Railgun Without a Breech

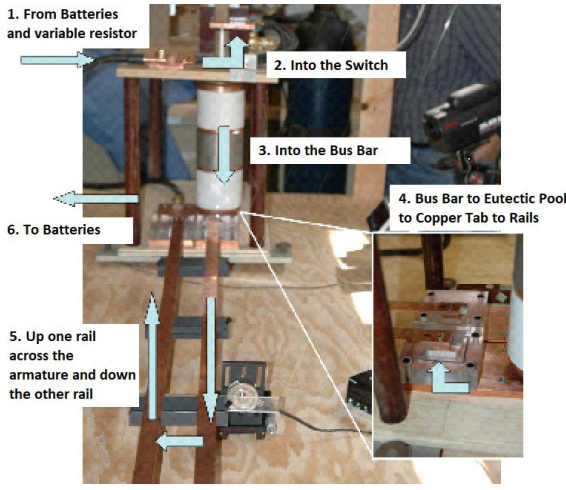
The following abstract, along with figures F.4, F.5, and F.6, is of an actual experimental device built for a master's thesis written by Mathew K. Schroeder, et al at the Naval Postgraduate School Monterey California. The thesis is titled *An Investigation of the Static Force Balance of a Model Railgun* by Matthew K. Schroeder, June 2007. That article can be found at:

http://stinet.dtic.mil/cgi-bin/GetTRDoc?AD=ADA473387&Location=U2&doc=Get

Abstract of Thesis

”An interesting debate in railgun research circles is the location, magnitude, and cause of recoil forces, equal and opposite to the launched projectile. The various claims do not appear to be supported by direct experimental observation. The goal of this research publication is to develop an experiment to observe the balance of forces in a model railgun in a static state. By mechanically isolating the electrically coupled components of such a model, it has been possible to record the reaction force on the rails and compare that force with the theoretical force on a projectile. The research is ongoing, but we have observed that the magnitude of the force on the armature is at least seventy times greater than any predicted equal and opposite reaction force on the rails.”

Figure F.4 below shows a photograph of this actual device, whereas figures F.5 and F.6 are schematics.



Matthew K. Schroeder et al

Figure F.4 Photograph of a Railgun [Fair Use]

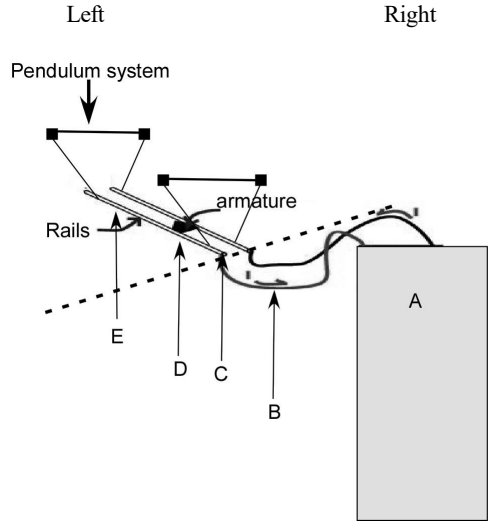


Figure F.5 Schematic of Railgun

A = batteries, capacitors, copper wires, etc., which complete the circuit.
B = copper wire conductor which delivers current to the rails. Parallel wire receives current from the rails.
C = conductor brushes used for free-floating attachment of the copper wires to the rails.
D = armature
E = rails

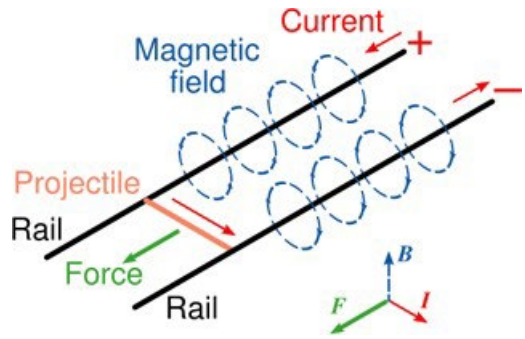


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Figure F.6 Schematic of Railgun with Lorentz Force [Fair Use]

The schematic as represented above is an enlargement, of Figure F.5 earlier, specifically of the region to the left of the dotted line labeled C.

Within the available literature, moreover, with reference to railgun physics, there is considerable theorizing, as well as speculation. Nevertheless, there is very little experimentation accessible for review that is not classified. Relative to railgun physics, the thesis offered above is the best article that this author has ever come across.

Again, Figure F.4 is a photograph of the experiment. Notice, the photo is complex, for that reason, difficult to decipher. Consequently, for ease of comprehension, it will be broken down into its individual components, by using schematics, as revealed in figures F.5 and F.6, above and figures F.7 and F.8, below.

Please refer to figures F.7 and F.8. The rails (E) and armature (D) are suspended with a wire system, somewhat analogous to a pendulum (SW).

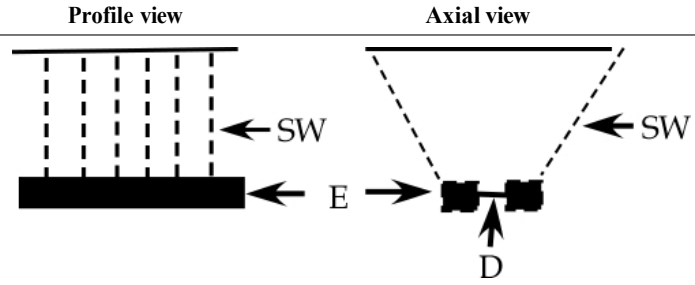


Figure F.7 Two Views of Railgun

See A, B, C of Figure F.8. B depicts the afferent conductor wire and the adjacent parallel efferent wire. C represents the conductor brushes. The remainder of the circuit is located, moreover, fixed to the ground (A).

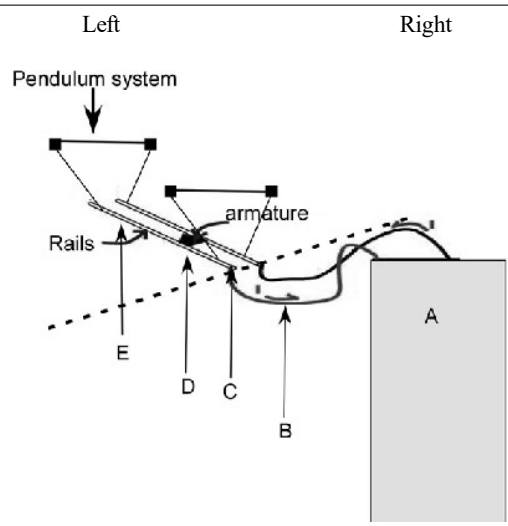


Figure F.8 Details of Railgun Construction

See figures F.5, F.6, F.7, and F.8 above. The rails (E) and the armature (D) with the use of wires (SW) are suspended like a pendulum. For that reason, the apparatus is able to freely rock back and forth, relative to the fixed copper wire conductors (B). The copper wires deliver to and receive current from the rails. Even so, during the pendulum-like motion, the rails are still able to maintain physical contact with the conductor wires by employing copper brushes (C). In addition, in one configuration, the armature can independently move relative to the fixed rails and vice versa. In another arrangement, they are fixed to one another. Furthermore, in the presence of a current, there is motion-gauging equipment, as well as pressure sensitive devices, the latter of which determine the amount of Lorentz force with respect to three different scenarios as presented below.

1. The armature and rails are fixed to each other.
2. The rails are fixed, and the armature is free to move.
3. The armature is fixed, and the rails are free to move.

With respect to each scenario, the experimental results are as follows.

In Scenario 1, whereby the armature and rails are physically attached to one another (Figure F.9), there is a forward net Lorentz force exerted on only the armature. Consequently, the armature pulls the attached rails along with its own motion. In addition, there are symmetrical net Lorentz forces attempting to push the rails apart; nevertheless, they are fixed to each other, so they cannot separate. Notice there is no breech, so no reverse force.

As a result, overall, the armature and attached rails rock forward, similar to a pendulum. In Figure F.9, this forward motion is characterized with the solid horizontal arrow. Observe again, there are no recoil forces.

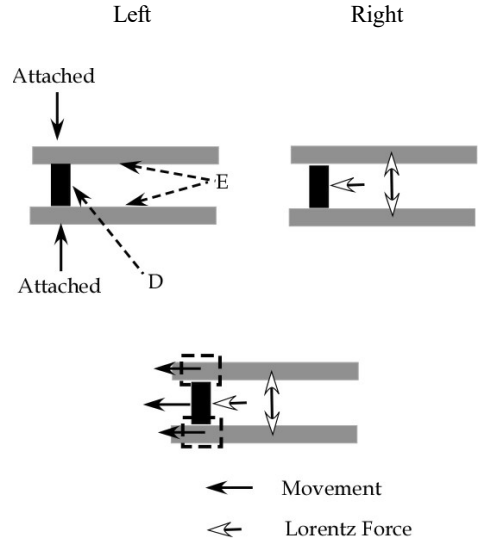
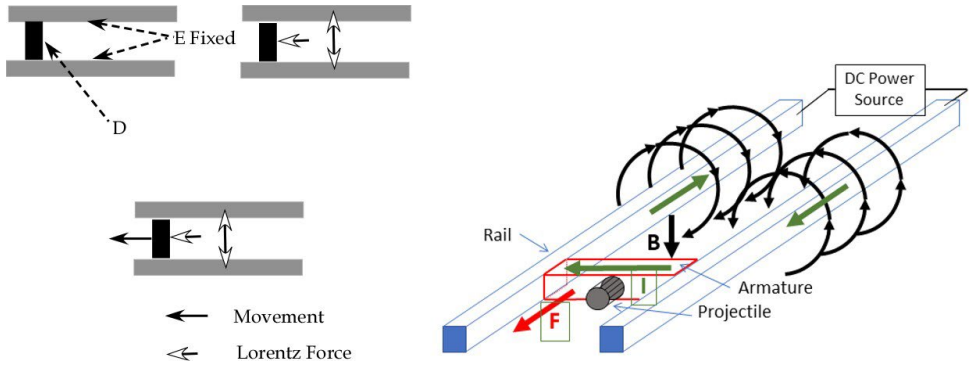


Figure F.9 Details of Railgun Construction—Entire Railgun Propels Forward
See definition of D and E under the title of Figure F.5

Scenario 1
1. Top left = structure
2. Top right = Lorentz forces
3. Bottom = direction of movement
4. Squares are the attachments

In Scenario 2, wherein the armature is free to move, and the rails are fixed (Figure F.10 below), there is a forward net force exerted only on the armature. For that reason, just the armature propels forward. Discern once again, there are no recoil forces.



http://intercax.com/2018/07/31/mbse-railgun-design-part-3/ [Fair Use]

Figure F.10 Details of Railgun Construction—Only the Armature Propels Forward.
See definition of D and E under the title of Figure F.5

Scenario 2
1. *Top left = structure*
2. *Top right = Lorentz forces*
3. *Bottom = direction of movement*

In Scenario 3, where the armature is fixed and the rails are free to move (Figure F.11 below), there is no measurable recoil force directed upon the rails. The sensitivity of Scenario 3, regarding the amount of recoil force exerted on the rails, is at least 70 times less than the Lorentz force exerted upon the armature of Scenario 2. For reinforcement, from the frame of the armature, there is no significant equal and opposite reaction force exerted on the rails. Yet again, there is no recoil force at the breech, as there is no breech.

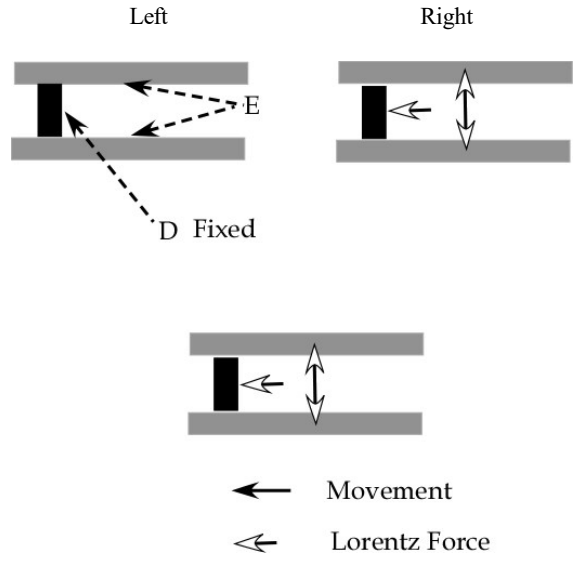


Figure F.11 Details of Railgun Construction—There is no Movement of the Rails or Armature.
See definition of D and E under the title of Figure F.5

Scenario 3
1. *Top left = structure*
2. *Top right = Lorentz forces*
3. *Bottom = no movement*

There is extensive debate within the literature as to whether the recoil forces of a railgun occur at the junction of the rails with the armature, or alternatively at the breech, presupposing there is a breech with recoil force.

What do these three experiments signify? Basically, as stated by physicist Matthew K. Schroeder, they prove there is no →significant← recoil force located at the juncture of the armature upon the rails (scenarios 1 and 3). Even so, the recoil force could still be located at the breech but only if there is a breech. Otherwise, Scenario 1 violates Newton's third law.

Now, with reference to this particular experimental device, the breech could include the copper wires, batteries, capacitors, etc. that complete the circuit. They are all positioned to the right side of the dotted line (C), furthermore labeled (C, B, A) as shown in Figure F.5.

Bear in mind, this is not the conclusion as written by Schroeder, rather only the opinion of the author. The device built by Schroeder did not even attempt to measure any forces other than those associated with the armature and rails. Therefore, the notion that recoil forces are possibly located at C, B, and A is only a presumption by the author.

This device, assuming it is a closed circuit with a breech (C, B, A), cannot self-propel in the absence of a propellant. The question is does this experiment contain a closed breech?

Propulsion in violation of Newton's third law

However, the railgun, as just presented, could be redesigned with a definite incomplete circuit. If so, then it could self-propel devoid of a propellant. This assumption presumes that Newton's third law does not always apply with respect to the interaction of currents with magnetic fields. And so the design of the Matthew K. Schroeder railgun is altered and revamped as revealed below in Figure F.12 and the following paragraphs.

Now, with respect to this hypothetical device, assume the armature is physically attached to the rails; moreover, the rails are fixed to each other.

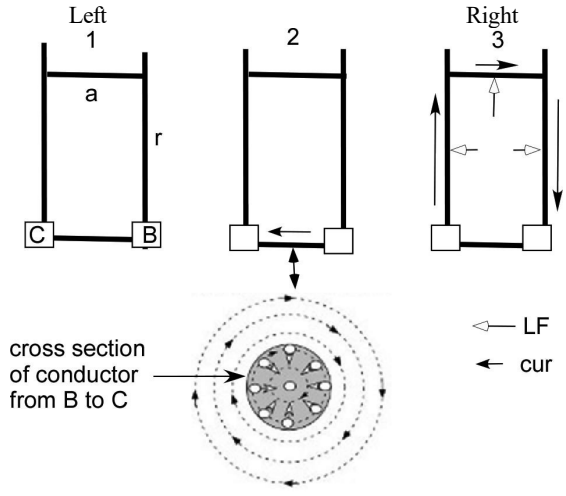


Figure F.12 Self-Propulsion with no Propellant

1. a = armature
2. r = rail
3. B = battery/generator/incoming (efferent) current portion of the capacitor
4. C = capacitor outgoing (afferent) current portion of the capacitor
5. cur = current
6. LF = Lorentz force

Time 1 occurs before the advent of the current and represents the physical structure of the device.

Time 2 happens when the current initially flows from B to C, to charge the capacitor. Therefore, as presented in figures F.12 and F.13, during this interval of time, all the Lorentz forces directed upon the lower wire conductor (B to C) are symmetrically oriented towards its center. As such, there is no overall net propulsion. See Figure F.13.

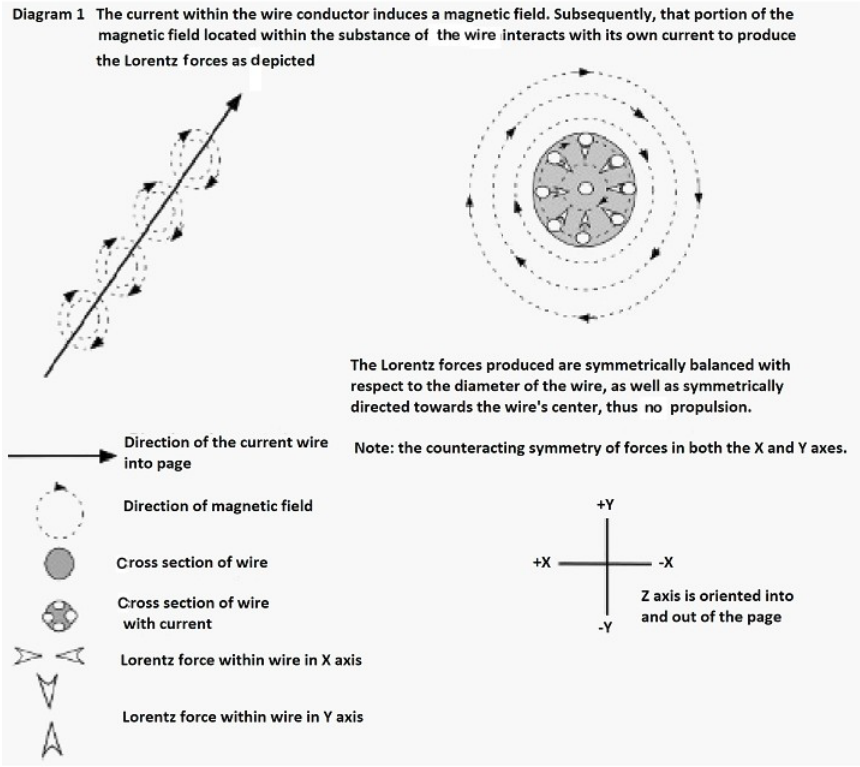


Figure F.13 Lorentz Forces are Symmetrically Oriented Toward the Center of the Wire, So There is No Propulsion.

Time 3 transpires, when the current flows from (C) through the fixed rails and armature, then back to (B). Recollect with respect to Scenario 1, if armature and rails are physically attached to each other, in the presence of a current, there is then a net forward Lorentz force exerted on only the armature, which subsequently drags the attached rails along with its own motion. This function is again shown in Figure F.14 below.

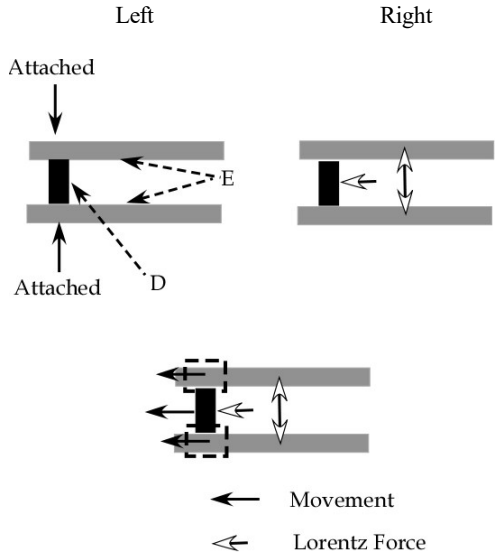


Figure F.14 Details of Railgun Construction
See definition of D and E under the title of Figure F.5
Repeat of Figure F.9

Here is the crucial concept to acknowledge. In this case, there is no breech involving the battery, copper cables, capacitor, or ECT, thus no recoil force. As a result, during this single brief pulse of current, the railgun propels forward in defiance of Newton's third law. This procedure could be repeated in rapid succession. Accordingly, there would be continuous forward pulsating propulsion.

The most important concept to grasp from this appendix is that the magnetic field produced by the current is actually a modification of the ether. So, when this modified ether then interacts with its own current, it produces propulsion without a propellant. Essentially, the current repels or pushes against its own induced modified ether.

APPENDIX G

ELECTRIC CURRENTS, MAGNETIC FIELDS, MAGNETIC PULSES AND ELECTROMAGNETIC PROPULSION

Abstract

A single circular loop conductor (ring) with its current induces a magnetic field, not only surrounding the ring but also within the substance of the ring. Subsequently, that portion of the magnetic field, which is located within the body of the ring, interacts with its own current to produce Lorentz forces. Electromagnetic propulsive forces are produced from this process. However, these forces are either blocked by the intact structure of the ring, or they are symmetrically oriented in opposing directions. As such, these latter forces counteract each other. Essentially, all the forces are balanced; consequently, there is no propulsion of the ring. However, if the magnetic field relative to one side of the plane of the ring is symmetrically distorted by a directed magnetic pulse, then for the duration of this pulse, there will be Lorentz forces within the ring, some of which are not blocked by its physical structure, nor annulled by opposing symmetrical forces. Accordingly, these forces are unbalanced. As a result, there will be electromagnetic propulsion of the ring along its axis.

Introduction

The intention of this appendix is to posit a theory of electromagnetic propulsion based upon an electric current, a magnetic field, as well as directed magnetic pulses (EMP). It is fundamentally a very simple concept based upon these three assumptions:

- A current within a wire conductor induces a magnetic field not only surrounding the wire but within the substance of the wire as well.
- Subsequently, that portion of the magnetic field, which is located within the wire, interacts with its own current, again within the wire to produce Lorentz forces, once more within the wire.
- By means of magnetic flux compression technology, one can project a powerful magnetic pulse in a specific direction, analogous to a gun.

Subsequently, these three assumptions will be used to assemble a hypothetical electromagnetic propulsion device. Due to the complex three-dimensional nature of this concept, it is considerably easier to explain this model if one uses diagrams. For that reason, six diagrams will be presented. Each diagram will present a concept that will lead to the next diagram, until finally the concept of electromagnetic propulsion is explained. The six diagrams are listed below.

1. A single straight wire conductor with a current.
2. Two straight wire conductors with their currents flowing in the same direction.
3. Two straight wire conductors with their currents flowing in opposite directions.
4. A single circular wire conductor (ring) with a current.
5. Two circular wire conductors (rings) with both of their currents flowing in the same direction.
6. A single circular (loop) conductor (ring) with a current, along with its induced magnetic field. The latter of which is distorted on one side, relative to the plane of the ring by a directed magnetic pulse. For that reason, there is electromagnetic propulsion.

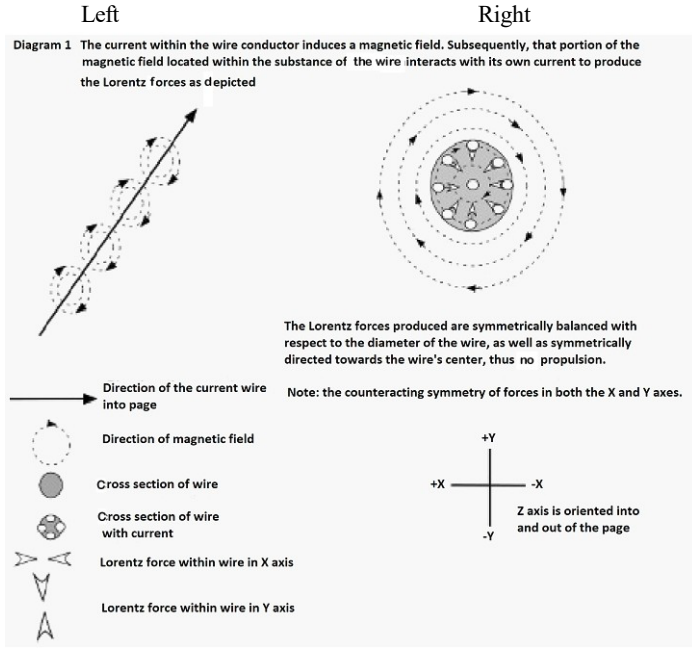


Figure G.1 One Wire with Current Flowing into the Page

Diagram 1 (Figure G.1)

Diagram 1 illustrates a single straight wire conductor, with its current flowing into the page. The wire with its current induces a circular magnetic field, not only surrounding the wire, but also within its own substance. Subsequently, that portion of the magnetic field, which is located within the body of the wire, then interacts with its own current to produce the Lorentz forces as depicted in Diagram 1. Notice, both the density of the magnetic flux, as well as the direction of the Lorentz forces, are symmetric with respect to the wire's diameter. Furthermore, the Lorentz forces are oriented symmetrically in a circle towards its center. This process produces electromagnetic propulsive forces. Nevertheless, due to the above symmetry, these forces are balanced. As a consequence, there is no motion or propulsion. On the other hand, if these forces were somehow asymmetrical rather than symmetrical, there would be propulsion. Nonetheless, this is not the case.

In this and subsequent diagrams, the overall Lorentz forces will be divided into separate vector forces relative to the X (+x,-x) and Y (+y,-y) axes and additionally, with respect to the latter illustrations in the Z axis. For example, in Diagram 1 (Figure G.1), the Lorentz forces counteract each other in both the X and Y axes. However, in reality, all the Lorentz forces are oriented symmetrically in a pattern of a circle towards the wire's center. As such, they again neutralize each other. In both instances, there is no propulsion as these forces are balanced. In essence, the two scenarios are analogous to each other. The author has chosen this method of explanation, so one can easily envision the concepts. Otherwise, the diagrams and description will be too complex to comprehend.

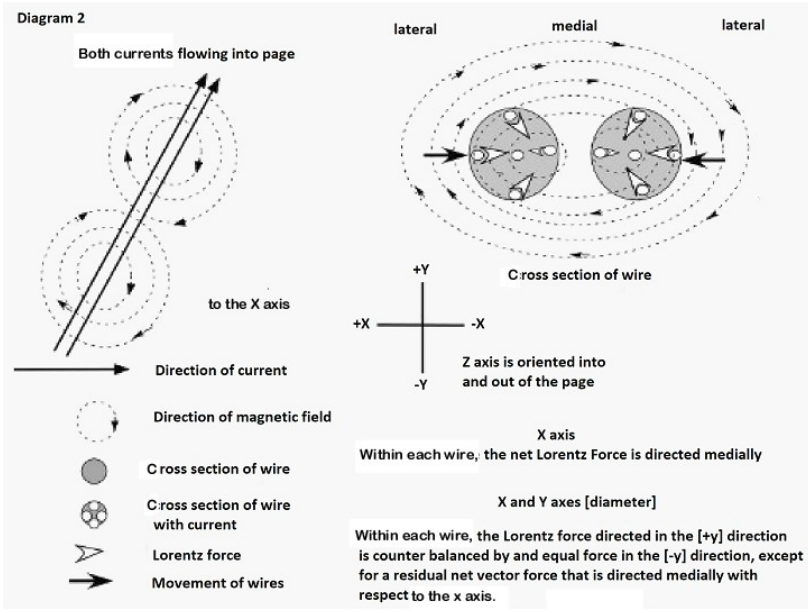


Figure G.2 Two Wires with Current Flowing into the Page

Diagram 2 (Figure G.2)

Diagram 2 depicts two straight wire conductors with both currents flowing into the page. Each separate wire with its current induces its own magnetic field, not merely surrounding itself, but also within its own substance. As illustrated in Diagram 2, the two magnetic fields interact to create one overall modified field. Subsequently, that portion of this one modified field, which is located within the body of each wire, interacts with the current in that same wire to produce the Lorentz forces as illustrated.

Notice with respect to each wire, the density of the magnetic flux in the X axis (+x versus -x directions) is asymmetrical, moreover, greater laterally compared to medially. As a result, the net Lorentz force that is directed medially is greater compared to the force which is directed laterally. Observe as well, relative to each wire, the density of the magnetic flux takes the form of a mirror image symmetrical pattern in the X and Y axes (diameter) relative the X axis. Consequently, the resulting Lorentz forces neutralize one another, except for a residual vector directed medially.

Therefore, overall, with respect to each wire, the direction of the net Lorentz force is medial, as a result, the wires propel towards each other. This process is actually electromagnetic propulsion, nevertheless, impractical, given that once the wires are in contact, all motion ceases. Make a note, outside the substance of the wires in the region of the interacting magnetic fields, there is no force. Forces are located only within the body of the wires, where the one modified magnetic field interacts with each of the two currents.

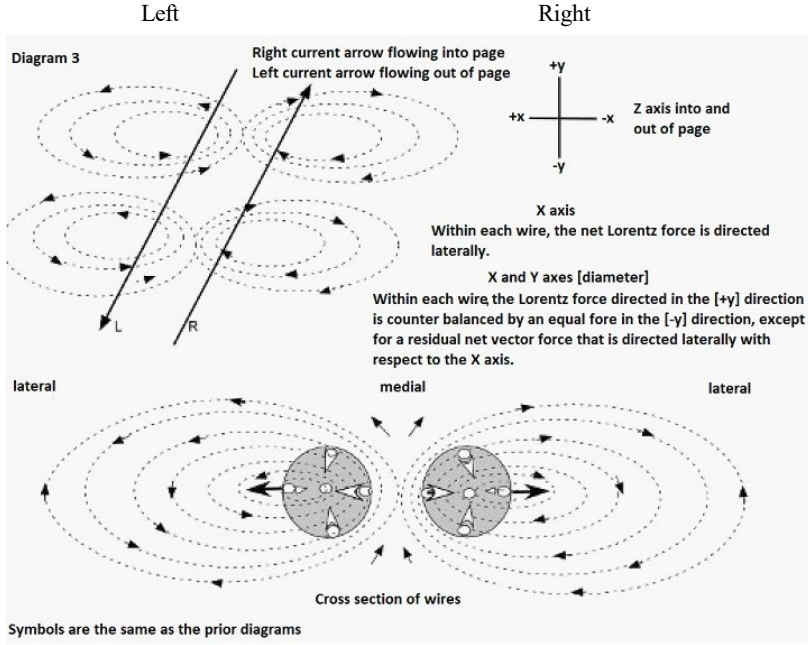


Figure G.3 Two Straight Wire Conductors with Opposing Currents

Diagram 3 (Figure G.3)

Diagram 3 illustrates two straight wire conductors with opposing currents. The left current is flowing out of the page, whereas the right current is flowing into the page. Each current induces its own magnetic field, not only surrounding itself but within its own substance as well. The two magnetic fields interact and form two separate modified fields, as depicted in Diagram 3. Subsequently, that portion of each modified field, which is located within the body of its own wire, interacts with its own current to produce the Lorentz forces as illustrated. Notice relative to each wire, the density of the magnetic flux in the X axis (+x and -x directions) is asymmetrical, moreover, greater medially compared to laterally. Therefore, the net Lorentz force that is directed laterally is greater compared to the force, which is directed medially. Observe as well, relative to each wire, that the density of the magnetic flux takes the form of a mirror image symmetrical pattern, in the X and Y axes (diameter) relative to the X axis. Therefore, overall, the Lorentz forces neutralize each other, except for a residual vector directed laterally.

Consequently, with respect to each wire, the direction of the net Lorentz force is lateral; as such, the wires propel away from each other. Once again, outside the substance of the wires in the region of the interacting magnetic fields, there is no force. Force is located only within the body of each wire, where the current within that wire interacts with its own induced modified magnetic field. This process is electromagnetic propulsion, though again impractical, since once the wires travel a given distance from each other, the two magnetic fields will cease to interact. Subsequently, each will transform into a single wire as depicted in Diagram 1.

Left Right

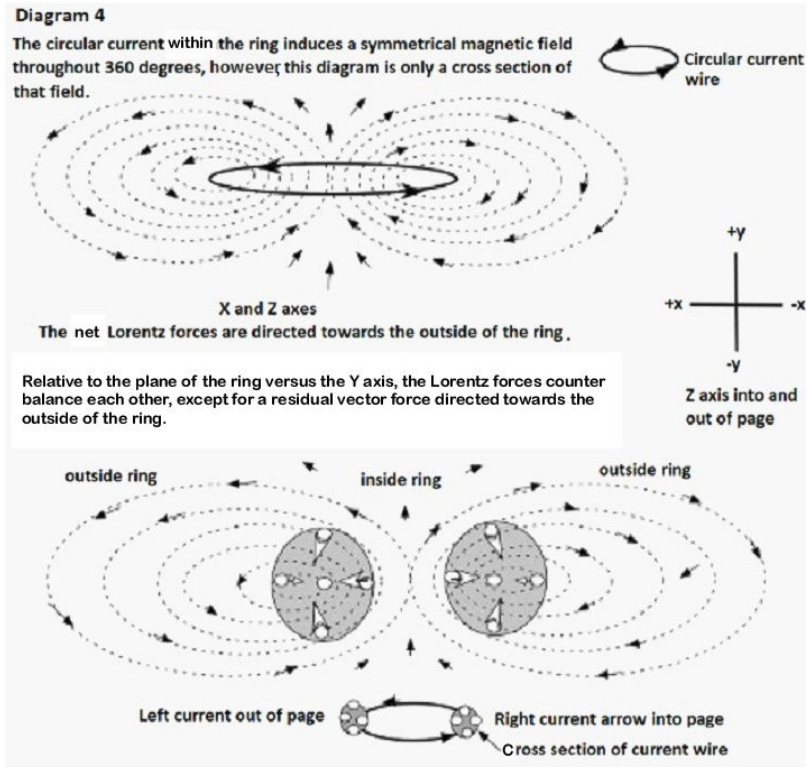


Figure G.4 Current in a Single Circular (loop) Conductor

Diagram 4 (Figure G.4)

Diagram 4 illustrates a current in a single circular (loop) conductor. In future deliberations, this structure will be defined as the ring. The shape of the magnetic field created by this current is equivalent to the classical magnetic field induced by a loop current, as depicted in Diagram 4. The ring with its current produces a magnetic field not just surrounding itself, but also within its own essence. Subsequently, that portion of the magnetic field, which is located within the body of the ring, interacts with its own current to produce the Lorentz forces as depicted. Discern that relative to the plane of the ring, the density of the magnetic flux is asymmetrical, moreover, greater within the inner side of the ring compared to its outer side. Therefore, throughout 360 degrees, the Lorentz forces that are directed towards the outside of the ring are greater compared to those forces which are directed towards its inside. Observe as well, relative to the plane of the ring versus the Y axis, the density of the magnetic flux, within the ring, takes the form a mirror image symmetrical pattern. Therefore, throughout 360 degrees, the Lorentz forces neutralize each other, except for a residual vector, directed towards the outside of the ring. Consequently, with respect to the plane of the ring, the overall net Lorentz forces are directed symmetrically and equally outward, throughout its circumference. Nevertheless, the ring is a physically intact structure; accordingly, it blocks these forces.

All the Lorentz forces produced within the ring are either blocked by its solid structure, or else they neutralize one another. As such, there are no unbalanced forces. Consequently, as previously depicted in Diagram 1, there is again no propulsion. Alternatively, if the Lorentz forces were somehow asymmetrical with respect to the plane of the ring, there would be propulsion. Commit this last concept to memory.

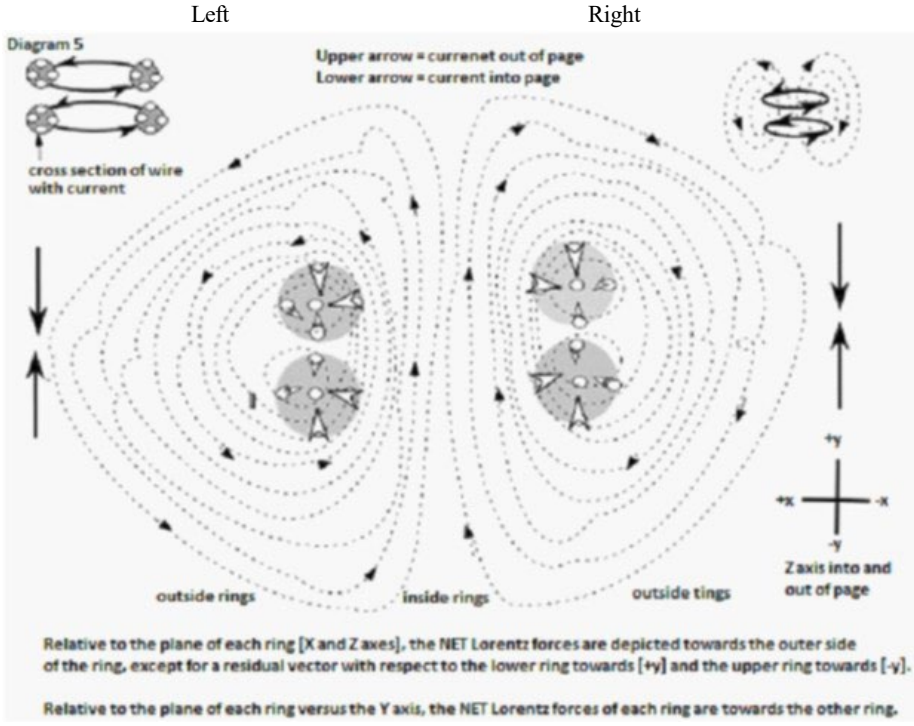


Figure G.5 Two Parallel Ring Conductors

Diagram 5 (Figure G.5)

Diagram 5 illustrates two parallel ring conductors oriented in the same axis with their currents flowing in identical directions. Each ring with its current induces a classically shaped magnetic field of a looped current, not only surrounding itself but within its own substance as well. The two magnetic fields interact to form one overall modified field as depicted. Subsequently, that portion of this overall modified field, which is located within the body of each ring, interacts with the current in that same ring. This produces the Lorentz forces as depicted above. With respect to the plane of each ring, (X and Z axes), the density of the magnetic flux in the ring is greater within the inner side of the ring compared to within its outer side. Therefore, throughout each circumference, the net forces are directed symmetrically towards the outer side of the ring, except for a residual vector towards (+y) with respect to the lower ring, and a residual vector towards (-y) with respect to the upper ring. In other words, relative to the plane of each ring, versus the Y axis, (throughout the ring) there is now an asymmetry of the density of the magnetic flux within each ring. On one hand, with reference to the upper ring, the density of the magnetic flux is greater towards the top of the page (+ y) compared to the bottom of the page (-y). On the other hand, with regard to the lower ring, the density of the magnetic flux is greater towards the bottom of the page (-y) compared to the top of the page (+y). Accordingly, the upper ring's net Lorentz forces are directed towards the lower ring (-y). Conversely, the lower ring's net forces are directed towards the upper ring (+y).

Fundamentally, all the individual Lorentz forces within each ring either neutralize one another, or they are blocked by its physical structure, with the exception of those unbalanced forces, which propel each ring towards the other ring, with respect to the Y axis. Once again, this is electromagnetic production, nevertheless impractical, given that once the two rings are in contact, then all motion ceases. At that time, together, they will act analogous to a single ring, as illustrated in Diagram 4.

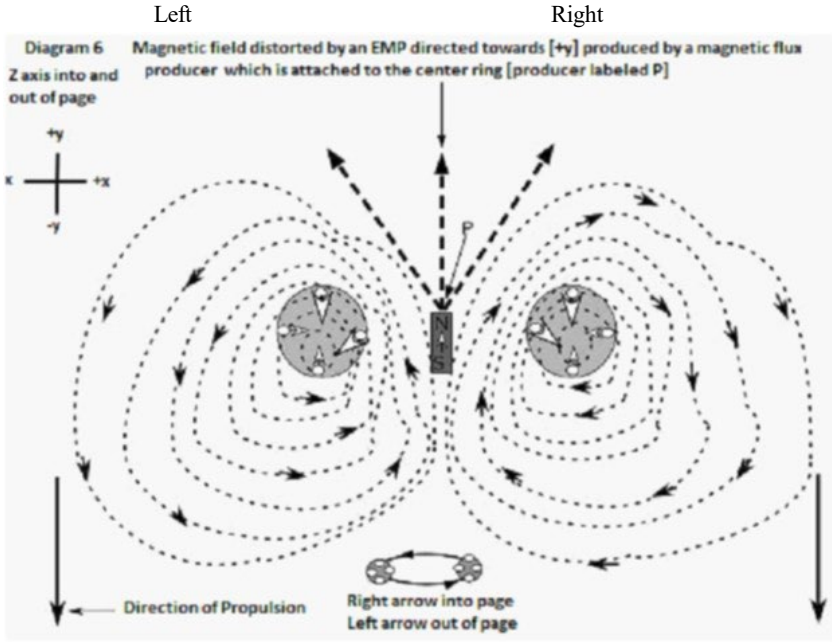


Figure G.6 Magnetic Flux Compression

Diagram 6 (Figure G.6)

In order to comprehend this last and crucial diagram, one must appreciate the concept of magnetic flux compression producers. This apparatus produces an extremely powerful directed magnetic pulse, which can be used as a military weapon, analogous to a gun. However, in this situation, it produces electromagnetic propulsion. Recall in Diagram 4, that relative to the plane of the ring, (X and Z axes), the net Lorentz forces are directed throughout its circumference towards the outside of the ring; nevertheless, the ring remains intact. As a consequence, there is no propulsion. Recollect as well, relative to the plane of the ring, versus the Y axis (throughout the ring), there is mirror image symmetry of the Lorentz forces. As a result, they neutralize one another, with the exception of a residual vector, oriented towards the outside of the ring, again blocked by its intact structure. So, there is no propulsion. In other words, with reference to Diagram 4, there are electromagnetic propulsive forces produced within the ring; yet they are either blocked by its intact structure, or they counteract one another. Essentially, there are no unbalanced forces and so no propulsion.

Now, imagine that from an attached magnetic flux compression producer, located at the ring's center, that a single symmetrical magnetic pulse is emitted. Moreover, assume the pulse is directed axially towards one side, relative to the plane of the ring (+y). Therefore, for an extremely brief period of time, this pulse will distort the shape of the magnetic field on that side. Thus, with respect to the plane of the ring versus the Y axis, the mirror image symmetry previously depicted in Diagram 4 is lost, as now depicted in Diagram 6. Observe, relative to the plane of the ring, at this instant in time, there are symmetrical net vector forces, throughout its circumference, directed towards the outside of the ring, which are neutralized by its intact structure. However, most importantly, there are now other net vector forces, throughout its circumference, directed towards the bottom of the page (-y), that are not neutralized. Given that these latter forces are unbalanced with respect to the Y axis, then during each pulse, there will be electromagnetic propulsion towards the bottom of the page (-y).

Conclusion

To reiterate this concept in simpler words, a circular conductor (ring) with its current induces a magnetic field, not only surrounding the ring but also within its own essence. Subsequently, that portion of the magnetic field, which is located within the body of ring, interacts with its own current to produce Lorentz forces.

There are electromagnetic propulsive forces produced within the ring by this process. However, these forces are either blocked by its intact structure or are symmetrically oriented in opposite directions. Therefore, they neutralize one another. All of the Lorentz forces within the ring are balanced. As a consequence, there is no propulsion of the ring.

Alternatively, assuming that the magnetic field relative to one side of the plane of the ring is symmetrically distorted by a directed magnetic pulse (EMP), then within the ring, there are still Lorentz forces. Nevertheless, in this scenario, some of them are not blocked by its intact structure, nor are they neutralized by other symmetrical opposing forces. As a result, these forces are unbalanced. Consequently, during each pulse, there will be electromagnetic propulsion of the ring along its Y axis towards the bottom of the page. This same procedure could be repeated in rapid succession, thus producing continuous pulsating linear propulsion.

APPENDIX H

THE UNIFICATION OF ELECTROMAGNETISM AND THE EARTH'S MAGNETIC FIELD WITH PERMANENT MAGNETISM

This appendix posits that the magnetic field of a permanent magnet is produced by multiple "solenoid-like" superconducting circular electron currents, all oriented in the same direction (domains), analogous to the magnetic field induced by an electromagnet, as well as the magnetic field generated by the Earth. As a result, the magnetic field of a solenoid, the Earth, and the domains of a permanent magnet are identical processes.

Introduction

At various times throughout the history of physics, a synthesis of purportedly unrelated concepts has occurred, such as the merger of electricity with magnetism by Scottish physicist James Maxwell and the unification of gravity and inertia by Albert Einstein. These amalgamations have simplified our understanding of the physical universe. Additionally, it has led to new theories, what's more, resulted in new inventions.

The goal of this article is to unite electromagnetism (solenoid), the production of the magnetic field by the Earth with permanent magnetism. As a result, assuming this model is correct, hopefully, once again, this synthesis will lead to other breakthroughs, along with new inventions.

For ease of explanation, this appendix will be divided into two sections.

Section 1 will describe the classical explanation of

- A solenoid

- The Earth's magnetic field
- Permanent magnetism

Section 2 posits an alternative model for the production of the dipole magnetic field of a permanent magnet (PM). This makes the magnetic field of an electromagnet, the Earth's magnetic field, and the magnetic field of a PM all a function of the same process.

Section 1

Classical Explanation of:

A Solenoid Electromagnet

A straight wire conductor with an electron current produces a circular magnetic field, not only surrounding the wire but also within the substance of the wire (left-hand rule). In addition, if the conductor is made into a solenoid, then the shape of the induced magnetic field is that of a classic electromagnet (solenoid), possessing both a north and south pole (Figure H.1), analogous to a dipole of a PM.

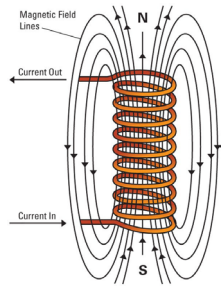


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Figure H.1 Solenoid with North and South Pole [Fair Use]

Classical Explanation of:

The Earth's Magnetic Field

Purportedly, the Earth's magnetic field is the product of numerous similarly oriented, very large circular electron currents located within multiple eddy flows of molten magma found deep within the Earth's crust, or alternatively, within the outer portion of its molten core. Fundamentally, this model is analogous to multiple, extremely large electromagnets, the sum of which produces the Earth's overall magnetic field (Figure H.2). Discern that both the Earth's magnetic field, as well as the magnetic field of a solenoid, are the exact same process.

Left Right

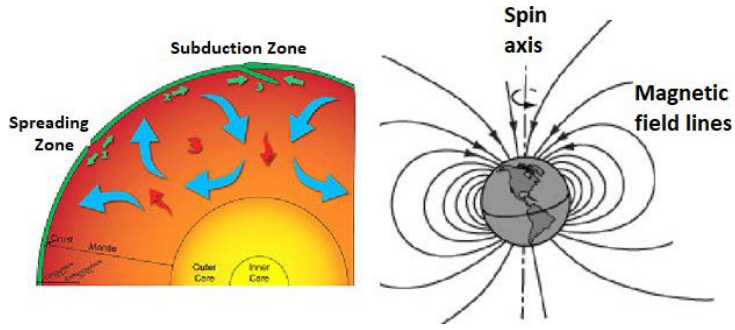

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Figure H.2 Magnetic Flux Comparison [Fair Use]

• *Left: Convection Currents in Earth*

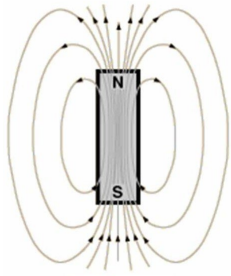
In Earth's mantle, large amounts of heat are transferred by convection currents, as shown above. Heat from the core and the mantle itself causes electric convection currents in the mantle. These convection currents cause the Earth's magnetic field.

• *Right: Dipole magnetic field of the Earth*

Classical Explanation of:

A Permanent Magnet

In contrast, the magnetic field of a permanent magnet (PM) is hypothesized to involve an entirely different mechanism. The standard theory postulates that within the substance of a PM, the unpaired outer shell electrons are aligned in the same direction. Additionally, given that each unpaired electron is a small dipole, then the summation of all similarly aligned unpaired dipoles creates the overall magnetic field (Figure H.3). Furthermore, all other randomly oriented dipole electrons, located within the substance of the magnet, counteract one another, therefore, neutralize one another. Consequently, this leaves only the similarly aligned unpaired electrons, the PM's magnetic field.

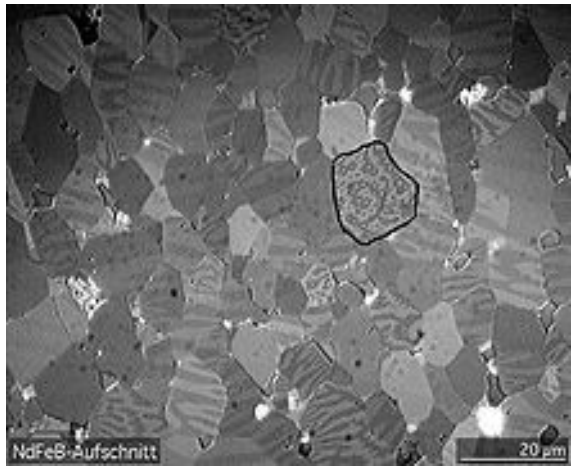


Hyperphysics
hyperphysics.phy-astr.gsu.edu/hbase/magnetic/elemag.html

Figure H.3 Magnetic Field of a Bar Magnet [Fair Use]

Nevertheless, all is not clear-cut. As it turns out, the overall magnetic field of a PM is made up from numerous microscopic sub-units called magnetic domains. Fundamentally, each domain corresponds to a small electromagnet possessing both a north and a south pole. In addition, the domains are composed of the individual electron dipoles all oriented in the same direction. Furthermore, all of the magnetic fields of the domains combine to form one overall general magnetic field.

The domains of a PM are, by and large, fixed in a given direction, consequently, a stable unchanging overall magnetic field. Alternatively, within a ferromagnet (FM), they are only oriented in a specific direction in the presence of an externally applied magnetic field. However, if the external field is removed, then over time, their orientations become random. So, with respect to this second setting, the FM eventually loses its general magnetic field. Pictured below (Figure H.4) are several grains of NdFeB with the magnetic domains made visible via contrast with a Kerr microscope.



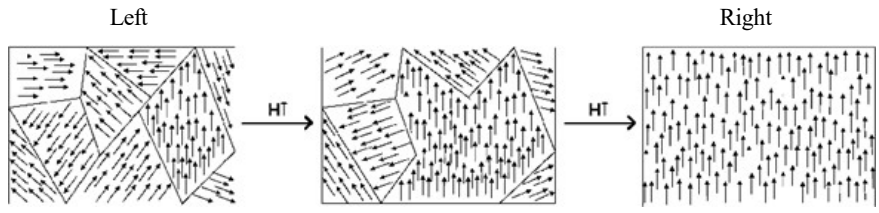
Wikipedia

Figure H.4 Grains of NdFeB with the Magnetic Domains [Fair Use]

The domains of an FM are not fixed structures, because they are malleable. For instance, an individual domain consists of similarly aligned, outer shell, unpaired electron dipoles. In addition, under the influence of an external magnetic field, each of the domains can incorporate into its structure additional

electrons, thus grows physically larger. Simultaneously, the domains reorient themselves so that they are then aligned along with the externally applied field.

This effect is depicted in Figure H.5. The blocks of arrows correspond to the domains. Notice, as the externally applied field increases from left to right, the domains grow progressively larger; moreover, at the same time, they become increasingly oriented in the same direction. Conversely, with the loss of influence of an external field (right to left), they lose electrons, become physically smaller, and concurrently assume a more random pattern. This pliability is much more apparent in an FM compared to a PM, even though it does occur in both.



Wikipedia

Figure H.5 Grains Aligned with Magnetic Field [Fair Use]

Section 2

An Alternative Model for the Production of the Magnetic Field from a Permanent Magnet

Recall that the magnetic domains of a PM are dipole structures. Consequently, there are only two possibilities. They either represent similarly aligned outer shell, unpaired dipole electrons or multiple solenoid-like, circular electron currents, analogous to what occurs within a solenoid. If this is not so, then what other option is there?

For that reason, this new theory posits that the domains of an FM, as well as that of a PM, are composed of "crystal-like groups" of outer shell unpaired electrons traveling in a circular pattern. And just like the standard theory, a ferromagnet's crystal-like domain structure can add or lose electrons depending upon external magnetic influences. As a result, they can change their size, shape, and orientation in the presence or loss of an externally applied magnetic field or from other adjacent domains. In contrast, the crystal-like electron domains of a PM are all fixed in a given direction.

Basically, this new model posits that the magnetic domains are actually stacks of parallel superconducting circular electron currents to some extent analogous to a solenoid. For instance, within each domain, the outer shell unpaired electrons travel from atom to atom in a circumferential manner, thus creating a circular electron current. Additionally, the individual circular units are stacked one on top of another, just as multiple permanent ring magnets will intrinsically stack, assuming similarly aligned poles.

Furthermore, with respect to a PM, in contrast to an FM, most of the domains are oriented **permanently** along the same axis. For that reason, there is then a fixed general overall magnetic field.

Now what evidence do we have that this premise is correct? Listed below are two observations that give support to this new postulate.

1. The outer shell electron structure of a PM is very similar to the outer electron shell configuration of a metal conductor. For instance, the best non-superconductors, such as copper, contain unpaired outer-shell electrons, just like a PM. The major differentiation is that the electron current within a conductor travels linearly from atom to atom, whereas the electron current of the PM travels in a circumferential pattern limited by the domain walls.

In addition, the current within the metal conductor requires a voltage, while the current within a domain of a PM must be superconducting, since it is persistent without the input of energy even at room temperature.

In summary, the similarity of the outer shell electron structures of a PM and that of a metal conductor adds credibility to this new theory because comparable electron configurations should correspond to similar electron functions.

2. To demonstrate further evidence that lends credence to this new theory, the following five magnetic field images are presented. They will reveal that the shape of a magnetic field produced within a permalloy (permanent magnet) is analogous to the appearance of magnetic field generated by a solenoid.

1. A permalloy (permanent magnet)
2. A straight wire conductor
3. A wire loop conductor
4. A permanent magnet
5. A solenoid

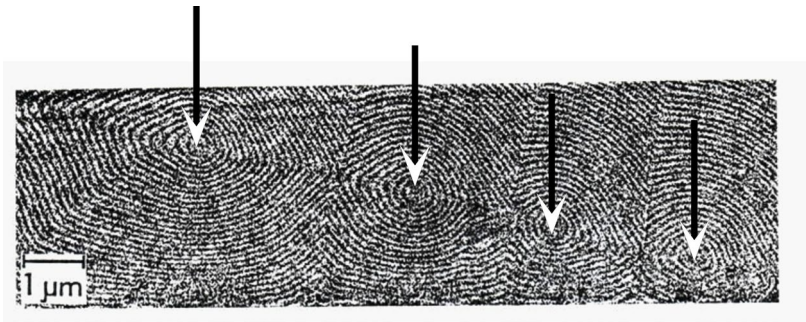
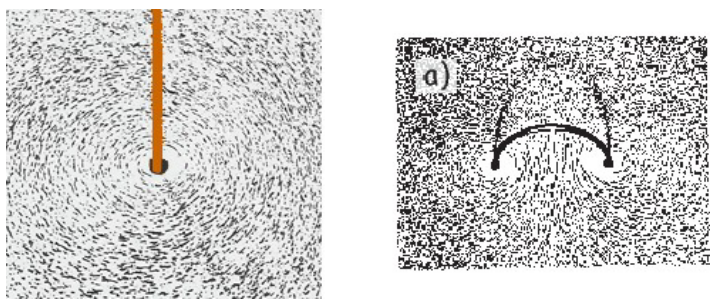


Figure H.6 Magnetic Field Located within a PM [Fair Use]

Figure H.6 shows the shape of a magnetic field painted by electrons within a permanent magnet. This image is from the book titled **The Quantum World Unveiled by Electron Waves *by Akira Tonomura, page 77*.**

Figure H.6 demonstrates the shape of the magnetic field located within a permalloy. A permalloy, you will note, is analogous to a PM. Observe that there are multiple adjacent circular-shaped magnetic field lines each of which surrounds a central core.

Left Right



Left image: School for Champions, Ron Curtus https://www.school-for-champions.comscience magnetic_field_moving charges.htm#.X4stV2Wofz1;
Right image: Semantics Scholar: https:// www.semanticscholar.orgpaperMagnetic-augmented-rotation-system-(MARS)-and Liu96e8416b2b79ed998f09aa7b6fdccd6690b82284/figure/3

Figure H.7 Magnetic Fields - Wire vs. Wire Loop [Fair Use]

Figure H.7 Left illustrates the shape of a magnetic field painted by iron filings induced by a current located within a straight wire conductor.

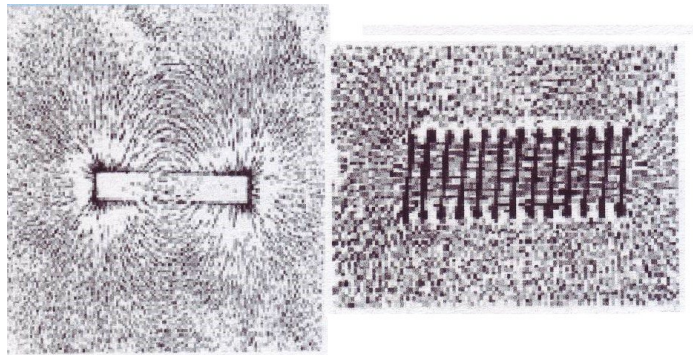
Figure H.7 Right depicts the shape of the magnetic field painted by iron filings produced by a loop wire current.

Figure H.7 Left illustrates the circular magnetic field lines produced by a current located within a straight wire conductor, analogous to the individual circular units of Figure H.6.

Figure H.7 Right demonstrates the shape of the magnetic field produced by an electron current located within a wire loop conductor.

Once again, observe the similarity of these images compared to Figure H.6, wherein there are multiple circular magnetic field lines positioned side by side, each of which is surrounded by a central core.

Left Right



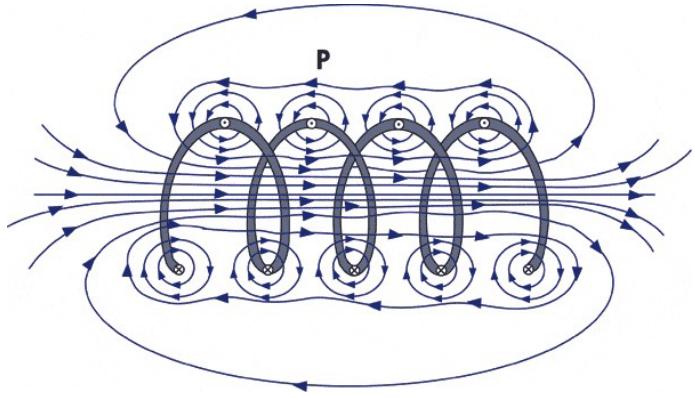
Wikipedia

Figure H.8 Magnetic Flux Compression [Fair Use]

Figure H.8 Left demonstrates the dipole of a PM, painted by iron filings.
Figure H.8 Right depicts the dipole of a solenoid painted by iron filings.

Figure H.8 Left illustrates the dipole of a PM and Figure H.8 Right the magnetic field of an EM. Observe the resemblance.

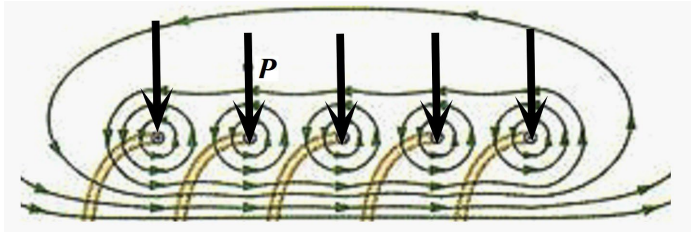
First, imagine a longitudinal cross section of a solenoid as presented in Figure H.9 below.



NDT Resource Center

Figure H.9 Cross Section of Solenoid [Fair Use]

Second, visualize the top longitudinal half of Figure H.9 as portrayed in Figure H.10 below.



NDT Resource Center

Figure H.10 Upper Half Cross Section of Solenoid [Fair Use]

In addition, picture in your mind a cross section of the wires, including their currents and associated magnetic fields. Then one would envisage, as illustrated above, multiple circular magnetic fields located side by side, each surrounding a central wire or a core.

Third, refer to figures H.11 and H.12 below. Figure H.11 is a photograph of the internal magnetic field of a PM painted by electrons. Figure H.12 is the photograph of the magnetic field of a solenoid painted by iron filings. The arrows placed on both photos depict central points, each of which is surrounded by a circular magnetic field, moreover, they are located side by side, just as they are in figures H.7 and H.10 right. Notice the similarity.

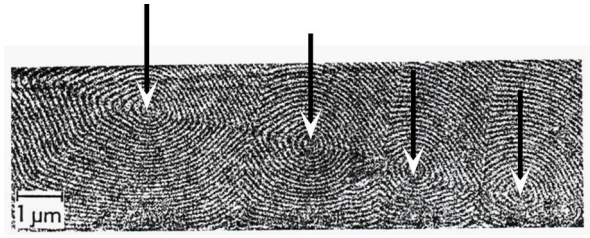


Figure H.11 Magnetic Field of a PM Painted by Electrons [Fair Use]

Image is from the book titled The Quantum World Unveiled by Electron Waves by Akira Tonomura.

tsgphysics.mit.edu/front/

Figure H.12 Magnetic Field of a Solenoid Painted by Iron Filings [Fair Use]

Observe the similarity of the magnetic field lines with respect to the internal structure of a PM (Figure H.11) versus a solenoid (H.12).

In summary, given the fact that the outer shell electron structure of a PM and a solenoid are comparable, plus the observation that the internal configuration of the magnetic field lines of both are analogous, these similarities then give credence to the new theory.

This theory posits that each domain of a PM consists of stacks of superconducting circular electron currents corresponding to a solenoid. Even so, although these two scenarios are similar, they are not identical. For example, with reference to a solenoid, there is only a single spiral wire. Alternatively, regarding the domains of a PM, the individual circular currents are positioned one on top of the other, analogous to a stack of coins. Additionally, with respect to a PM, since there is no input of energy, moreover, as there is no production of heat, then the electron currents within the domains of a PM must be self-sustaining. Consequently, they are super-conducting at room temperature.

Furthermore, the magnetic field lines located within the domains of a PM are markedly entrained. This is because they must pass through multiple, extremely compact "solenoid-like"-shaped loop currents, which are not only located on top of one another but also have stacks positioned closely side by side. As a result, the magnetic field lines located within the substance of a PM are not as dispersed compared to that of an EM. This is also due to the fact that the latter does not trap the field lines as much, for its central core consists mainly of air. In effect, the appearance of the internal field lines within a PM are significantly more compact compared to the open central portion of an EM. This divergence is clearly evident with respect to the figures H.11 and H.12.

This appendix posits that the production of the magnetic field of an electromagnet, the Earth's magnetic field, and the magnetic field of a PM are all one and the same process as embodied in figures H.13 and H.14.

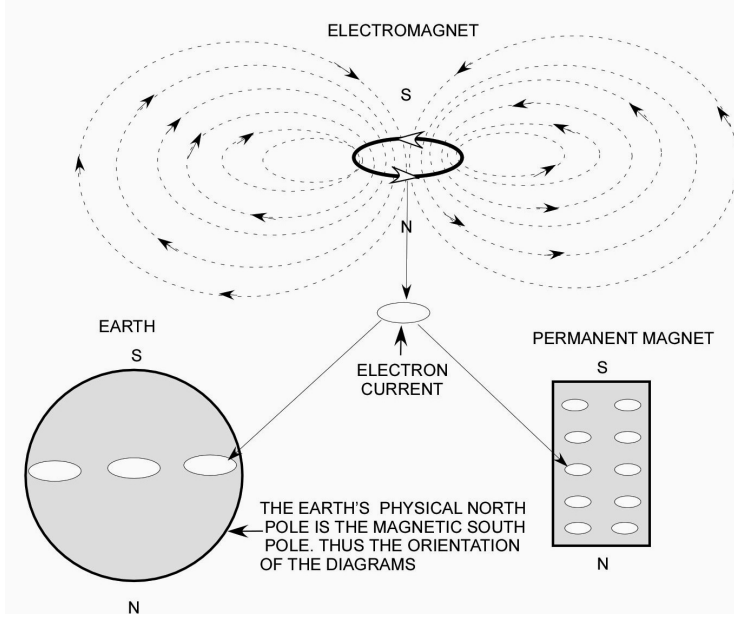


Figure H.13 Same Process Develops for the Electromagnetic, the Earth's Magnetic Field, and a Permanent Magnet.

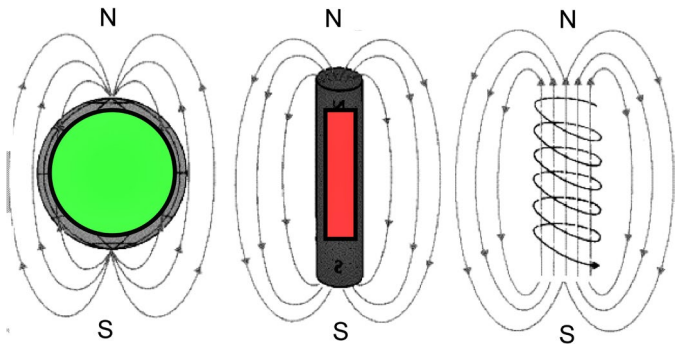


Figure H.14 Magnetic Fields of the Earth, a Permanent Magnet, and a Solenoid [Fair Use]

And so, assuming this new premise is correct, the dipole electron model for the production of the magnetic field of a PM is in erratum, as such, it can be discarded.

In Summary

This appendix demonstrates that the above magnetic fields are, in fact, identical functions. The fields produced by a PM, a solenoid, and the Earth's magnetic field are all related to one basic hypothesis rather than two distinct concepts. This is usually the hallmark of a superior theory, for it is simpler (Occam's razor).

APPENDIX I

PHYSICAL STRUCTURE OF THE ELECTRON

The Three-Dimensional (3D) Physical Shape of the Electron

Presupposing the concepts as now presented in Appendix I are correct, then the dipole model of the electron, as well as other models as classically proposed, are in erratum. For example, according to one classical description, the physical structure of the electron is that of a dipole, a structure with angular momentum = spin. Nevertheless, from a review of the literature, the author cannot ascertain how this model was obtained, except for an extrapolation of the dipole theory of a permanent magnet.

Recall an electron, traveling at a right angle relative to a uniform straight magnetic field is deflected either +90 or -90 degrees sideways with respect to its own direction and also of the uniform field. This dichotomy indicates two types of electron spins (up or down). However, again the author can find no actual experimental evidence that the spin of an electron consists of a revolving particle, analogous to a rotating top with a north and south pole.

With reference to the literature, there are multiple posited models for the 3D physical shape of the electron. However, each is a function of a different theory, such as the classical dipole model of a permanent magnet (PM), and the electron cloud model of quantum mechanics (QM). In essence, no one really knows what an electron looks like three-dimensionally. See quote below from a hyperphysics website:

The property called electron spin must be considered to be a quantum concept without detailed classical analogy. The term "electron spin" is not to be taken literally in the classical sense as a description of the origin of the magnetic moment. To be sure, a spinning sphere of charge can produce a magnetic moment, but the magnitude of the magnetic moment cannot be reasonably modeled by considering the electron as a spinning sphere.

http://hyperphysics.phy-astr.gsu.edu/hbase/spin.html

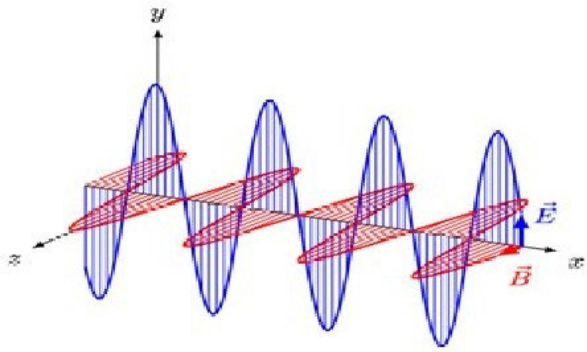
So electron spin is a QM mathematical construct and not a three-dimensional pictorial concept.

Einstein's relativity theories postulate the absence of the ether. This supposition leads to illogical, conclusions, such as the twin paradox problem or the quandary of simultaneity. In contrast, the publication, titled *The Ether*, specifically chapters 1 and 2, puts forward an alternative theory of relativity, whereby there is an ether, moreover, consistent with common sense reality. As a result then, these irrationalities no longer apply.

In the same manner, it is much easier to explain the electron's physical structure presuming the existence of the ether. For that reason, the following attributes are presented. Subsequently, these attributes will be used to explain the 3D structure and function of the electron, furthermore, as a product of the ether.

The Attributes

1. Electromagnetic radiation (EMR) consists of a wave of the ether to some extent analogous to how water waves traverse through water. In addition, EMR is composed of undulating, moreover, alternating right-angled electric and magnetic fields, traveling through the ether (itself) at c. Furthermore, EMR in one of its forms exists as a discrete packet called a photon (see Figure I.1).



Wikimedia Commons

Figure I.1 Electromagnetic Wave [Fair Use]

Figure I.1 shows alternating right-angled magnetic and electric fields—this, in association with a given amplitude and length, is the photon.

2. An electron (matter) is essentially a reorganization of the electric and magnetic fields of EMR. Basically, EMR's linear momentum traveling through the ether at (c) is converted into angular momentum, due to the fact that it spins upon itself. As a result, it transforms into an electron.

However, after this alteration, it is then at rest or near rest with the ether. In addition, EMR'S electric and magnetic fields rearrange to form a central spherical radiating electric field surrounded by a circular magnetic field as illustrated in Figure I.2 below.

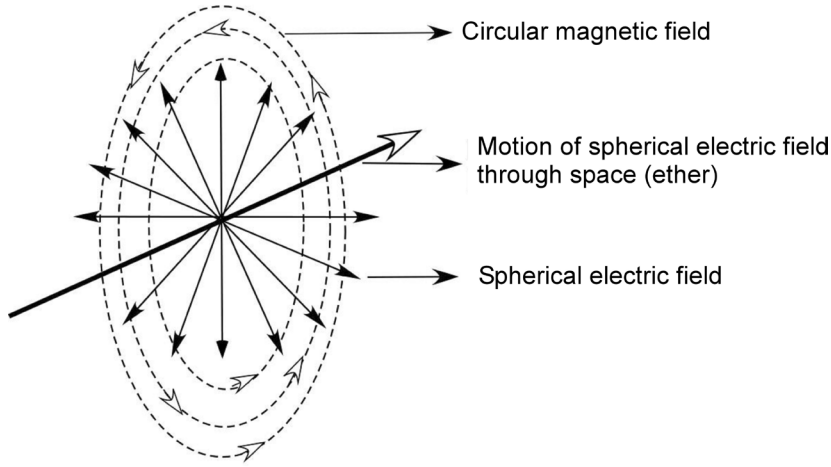


Figure I.2 Spherical Electric Field Surrounded by a Circular Magnetic Field

The electron consists of a spherical central radiating electrical field along with a circular magnetic field, the latter with its plane oriented perpendicular relative its motion through space (ether of PFSRT). Note: there is no particle, only fields.

3. This transformation only occurs as a function of a precise packet with a specific energy (e.g., 0.511 Mev), in other words, a quantum. In addition, as a speculation, the direction of the spin of EMR (photon) could be related to the type of spin of the electron (e.g., up or down).

4. The electron is not a particle with associated radiating fields; rather, the field or fields are the electron, just as EMR consist of only alternating fields. The notion of a particle is only a perception, which occurs when the fields, which are the electrons, then interact with the fields (electrons) of the measuring instrument. As a result, for that measuring instrument, this interaction produces a quantum change in its orbital shell structure. In effect, the quantum interaction involving only fields located within the detector's electron shell structure is what is assumed or perceived to be a particle. Nevertheless, again, there is no particle only fields.

5. All other subatomic structures (protons, neutrons, quarks, etc.) are constructed from electromagnetic radiation, moreover, are fields, since they too are interchangeable with EMR.

6. When an electron and proton, as a function of their opposite electric fields, attract and orbit one another, their magnetic fields also interact in a very complex manner. Bear in mind, the magnetic fields generated by protons (quarks) are much weaker compared to the magnetic fields produced by electrons. However, the different opposite spins of the electrons located within the orbital shells generate equal opposing/attracting magnetic fields. In addition, the nuclear components also possess opposite spins. So, all of this is part of the complex interactions, as well.

7. Therefore, an atom is actually a balance of all of its electric and magnetic fields/forces, which are in a stable state of equilibrium. Additionally, an electron does not orbit the nucleus (proton) analogous to how a planet orbits the Sun. Instead, it orbits the nucleus with a "rapid random-like" orbital pattern.

8. Again, an electron is created from only electric and magnetic fields. As such, neither field is located at a precise location with respect to space (ether). In theory, these fields could extend to infinity. The electron's two fields are spread out over a volume; there is no one specific point with respect to space (ether), whereby one can say the electron exists, but only a region.

9. Given the two assumptions of random rapid motion (momentum vis-á-vis QM) and lack of locality (position vis-á-vis QM), integrated over a short period of time, as an electron orbits its nucleus, it forms a cloud-like pattern. Mathematically, one cannot simultaneously determine the exact position and the exact

velocity of the orbiting electron. Take note, this model is analogous to the quantum mechanics model of the atom.

10. This new theory posits that the complex interacting fields, created by all of an atom's protons, neutrons, electrons, etc., are in a stable state of equilibrium, which is the atom, for this interaction is what holds its constituents together. In contrast, other configurations are unstable. So, with respect to this scenario, the atom decays into other equilibrium forms and/or fields. Fundamentally, different elements are associated with dissimilar equilibrium points, represented by diverse configurations of their complex interacting and orbiting electric and magnetic fields (protons and electrons, etc.). Once again, this concept is consistent with QM.

11. In the same way, molecules, as well as other larger structures, including the magnetic domains of a permanent magnet, are also stable equilibrium points involving large numbers of atoms. What is more, the superconducting circular electron currents located within a magnetic domain of a PM are a function of a stable state of equilibrium relative to a group of electrons moving in a circumferential pattern.

In Summary Up to This Point

Electromagnetic radiation (EMR) is posited to be a wave of undulating, moreover, alternating right-angled electric and then magnetic fields traveling through itself (ether) at c, somewhat analogous to how water waves traverse through water. Additionally, EMR can transform into an electron and vice versa.

Similarly, the electron consists of only electric and magnetic fields, as is EMR. So the only difference between these two entities is the physical configuration of the electric and magnetic fields and their different velocities with respect to the ether. Furthermore, there is no particle for either entity, rather, only fields.

From another perspective, matter is basically a product of the ether. What all this signifies is that space, a vacuum, or what we consider as "nothing at all" is, in fact, by far the most fundamental "stuff" of the universe. So, if the stuff or the ether, assumes the form of a wave that traverses through itself at c, then we define it as EMR. And if at certain fixed units of energy, instead of traveling through itself with linear momentum, it subsequently curls upon itself, moreover, spins with angular momentum (up or down), then it transforms into what we define as matter (e.g., electrons).

Therefore, the matter of the universe is constructed from what the majority of individuals would consider as nothing at all. But in fact, assuming the postulates of this appendix are correct, it is something. Given the above attributes, which describe the interrelationships of matter, energy, and the ether, moreover, the mechanism as to how this creates what we call the atom, let us now return to the new proposed morphology, as well as the function of the electron.

The Structure and Function of the Electron

In the following paragraphs, please pay close attention to the methodology of the descriptions presented. By understanding how a linear current located within a straight wire conductor produces its circular magnetic field, it is then relatively easy to envisage the actual physical structure of an individual electron.

In actuality, the overall magnetic field produced by a current within a straight conductor is the summation the magnetic field of each of its individual electrons. In point of fact, they are intertwined. This is the rationale for why the explanation below is presented in such a manner.

Before proceeding, recall the classic concept that a current is a positive charge of flow (right-hand rule), whereas an electron current is a negative flow of charge (left-hand rule). This appendix defines a current as a flow of electrons. See figures I.3 and I.4.

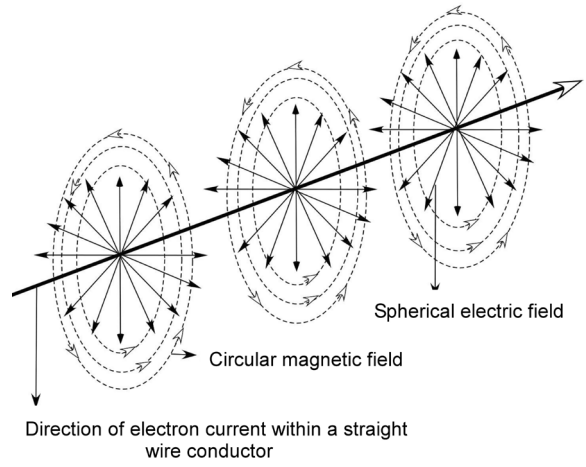


Figure I.3 Image depicts individual electrons of a current within a conductor and their associated electric and magnetic fields.

With reference to a single straight wire conductor with an electron current, the summation of all the magnetic fields produced by each individual electron of that current is what produces the classical circular-shaped magnetic field surrounding the conductor.

Within the conductor there are an equal number of electrons and protons; therefore, there is no overall electric field, because the opposite and equal electric fields neutralize one another. Alternately, there is an overall magnetic field, because all of the magnetic fields do not counteract one another.

Consequently, those magnetic fields not counteracted are the magnetic fields of the current. The summation of all the magnetic fields of the individual electrons depicted in Figure I .3, above, is then Figure I.4 as shown below.

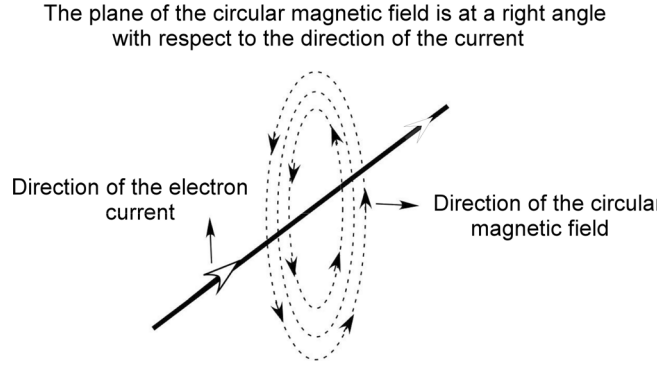


Figure I.4 Summation of Magnetic Fields

The summation of all the individual magnetic fields of all the electrons produces the overall magnetic field of the current left-hand rule.

The electrons of a current, located within a conductor, traverse at a very slow rate. Alternately, the wavefront of the magnetic field induced by the current travels along the conductor extremely fast, in all probability a very high fraction of the speed of light.

This concept is clarified with the following description, then analogy. Under the influence of a voltage, the first electron within the conductor strikes an adjacent second electron, moreover, in the direction of the voltage. In turn, that electron bumps into the next adjoining electron, once again in the direction of the voltage, and so on and so forth, eventually involving the entire conductor's length. This is the electron current.

This is analogous to a single line of pool balls, whereby the eight ball strikes it head on. As a result, the impulse of momentum is transferred along the line from ball to ball. Even so, there is only minimal movement of each individual ball. For example, when an eight ball strikes the first ball head on, its momentum is transferred to that ball. In turn, that first ball transfers its momentum to the second ball and so on and so forth. Now, due to the fact that the last ball receives momentum from the next to the last ball, moreover, as there is no other ball to strike, it leaves the line with a velocity equal to the incoming eight ball. This is assuming no friction and inelastic collisions.

With reference to this analogy, the minimal movement of the pool balls along the line is analogous to the extremely slow velocity of the electron current. And the impulse of momentum relative to the line of pool balls corresponds to the very rapidly moving wavefront of the magnetic field as it travels along the conductor. With respect to the pool ball analogy, as the balls bump into each other, there is resistance, which correlates with the impedance of the current. This effect produces heat.

It is also conceivable, but probably less likely, that the voltage affects all the electrons (current) at once (c), but they cannot travel within the conductor at a rapid rate, because other subatomic entities retard that motion. However, this concept does not explain the rapid traveling wavefront of the circular magnetic field ($<c$).

According to Einstein, an electron **at rest with the observer** is only an electric field. Alternatively, an electron possessing a velocity relative to the observer possesses both an electric field and a magnetic field. In addition, the greater the electron's velocity, the greater then is its magnetic field as an LTF.

In contrast, with reference to the premise of this book, assuming the existence of the ether, then an electron **at rest with the ether (PFSRT)** consists of only a spherical electric field. And an electron traveling with a **velocity with respect to the ether** possesses a circular magnetic field a s well. Again, the greater its velocity relative to the ether, the greater then is the magnetic field, moreover, as an LTF, nonetheless limited by the speed of light. In addition, the plane of the electron's circular magnetic field is oriented perpendicular relative to its direction through space (ether of PFSRT). See again Figure I.5, a repeat of Figure I.2.

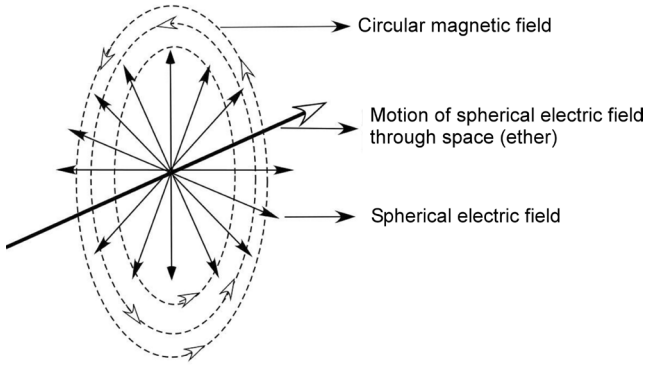


Figure I.5 Repeat of Figure I.2

Spherical Electric Field Surrounded by a Circular Magnetic Field

Taking into consideration this new ether theory, a more likely postulate is that an electron at rest with the ether possesses both a central spherical electric field, and a magnetic field (spin), which represents its basic 3D structure. Additionally, this elementary magnetic field (spin) is what physicists perceive as its dipole magnetic moment. When the electron increases its linear velocity with respect to the ether (PFSRT, SRT), its basic magnetic field (spin) then increases by an LTF (VMF). Furthermore, its plane then orients perpendicular relative to its motion through space (ether of PFSRT).

This book posits that the velocity factor of inflowing space at the Earth's surface is 11.2 km/sec. For future reference with respect to this appendix, the physical inflow of space at the Earth's surface will be defined as the ether (11.2 km/sec).

So, presuming the validity of this premise, then within a metal conductor, absent a current, located at the Earth's surface, all of the electrons and protons possess an equal velocity with respect to the ether (11.2 km/sec).

The conductor consists of approximately equal numbers of electrons and protons. Moreover, both types of particles (fields) possess symmetrically opposing magnetic fields. Therefore, all these diverse magnetic fields counteract one another with the exception of the unpaired outer shell electrons. Even so, these electrons randomly orbit their own nuclei. Consequently, in totality, with reference to these specific unpaired electrons, there is then no overall magnetic field direction, thus also no overall magnetic field. In addition, the opposing equal numbers of opposite electric fields negate one another as well. So, with respect to this reference frame, a conductor absent a current possesses neither an overall magnetic nor an overall electric field.

On the other hand, whenever an electron current is present, these outer shell electrons and only these unpaired electrons, which are in motion as the →net← current, then possess a greater linear velocity relative to the ether, compared to the protons, with opposing spins, and all other electrons.

In addition, the outer shell unpaired electrons all possess a spin of only one direction. Accordingly, when these specific electrons travel, as the current, within a straight wire conductor, their similarly aligned magnetic fields are then all oriented in the same rotational direction. Furthermore, they have a greater magnetic field compared to all the other electrons regardless of the direction of spin. This is because they possess, compared to all the other electrons, a relative increased velocity with respect to the ether. What is more, these electrons are traveling along the same linear pathway; whereas all the other electrons regardless of direction of spin, summed together, possess no net specific direction.

Therefore, compared to the scenario, absence a current, whereby the opposing magnetic fields negate one another or randomly orbit without net direction, then in this case, where there is a current, the magnetic fields no longer counteract one another. What remains is a circular magnetic field. And this field is a function of only net linear current, which, in turn, is a function of the increased velocities of all these electrons relative to the ether.

Recall again, within the conductor, there is still an equal number of electrons and protons. Therefore, there is no overall electrical field. In addition, the proton's opposing magnetic fields counteract one another. Therefore, once again, all that remains is the circular magnetic field of the net current, a function of the ether.

Conclusion

These are the pertinent concepts.

1. The electron consists of only a spherical central radiating electrical field along with a circular magnetic field, the latter oriented with its plane perpendicular with respect to its motion through space (ether of PFSRT). There is no particle, only fields. See figures I.5 and I.6 (a repeat of Figure I.2).

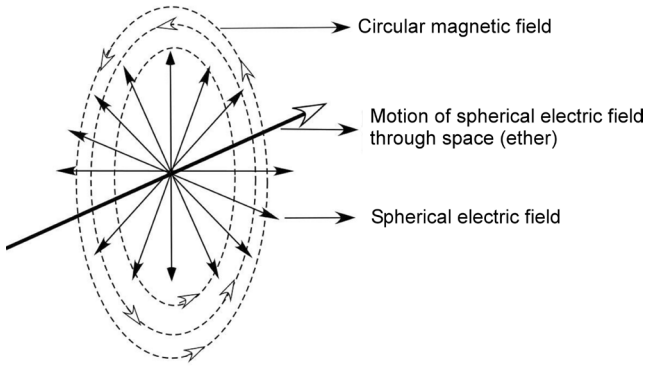


Figure I.6 Spherical Electric Field Surrounded by a Circular Magnetic Field

2. In addition, the circular magnetic field of an electron is only generated when it possesses a velocity relative to the ether (VMF). The higher the electron's velocity relative to the ether, the greater then is its magnetic field, moreover, as an LTF. See figures I.5 and I.6.

3. Furthermore, as above, the circular magnetic field's plane is oriented perpendicular relative to its motion through space (ether).

4. What is more, the overall shape of the magnetic field associated with a n electron current i s the summation of the magnetic field from each individual electron of that current as represented in figures I.3 and I.4.

Basically, all one needs to recognize is that within a metal conductor, **without a current**, the opposing electric fields of the protons and electrons counteract, therefore, neutralize one another. Additionally, all the magnetic fields of the protons and electrons, including their opposite spins, also neutralize one another, except the unpaired outer shell electrons. However, they have no overall direction, for they randomly orbit their nuclei. For all these reasons, within a conductor absent a current, there is no overall electric or magnetic field.

In contrast, **if a net electron current exists**, then these specific unpaired outer shell electrons, which are in net linear motion *relative to the ether of PFGRT*, possess, compared to all the other protons and electrons an increased velocity (summation from atom to atom relative to the either). In addition, these unpaired electrons are aligned along the same linear pathway moreover, with the same direction of spin/rotation. Therefore, the previous negating magnetic field anti-symmetry with respect to the scenario without current is then absent. So, in this case, the opposing electric fields s till cancel one another; however, the opposite magnetic fields now do not.

If one assumes that the plane of the circular magnetic field of an electron orients itself perpendicular with respect to its motion through space (ether), then the overall circular magnetic field associated with a straight-wire current is a function of the summation of all the magnetic fields associated with each individual electron of that current.

The key concept to take home is this: the configuration of the magnetic field of a single electron within a current and the configuration of the overall magnetic field produced by an electron current are related to one another. By knowing one, the other becomes visible. This is how the structure, as well as the function, of the electron is known.

Epilogue

The author has several other reservations relevant to this theory. A current consists of a line of traversing electrons. So, as all these magnetic fields interact with one another, individually, their shape changes. For that reason, the configuration of the magnetic field of a single electron at a velocity relative to the ether

may not precisely match its shape, assuming it's a part of a linear current at the same velocity—again, relative to the ether. Nevertheless, there must be at least some correlation.

In addition, the electron is only a spherical electric field, but as it plows through the ether, it distorts that ether, which then is the magnetic field. This is somewhat similar to when a boat plows through water; it distorts that water to form waves. So, the magnetic field and water waves are somewhat analogous. But in contrast to a boat where the water responds to both velocity and acceleration, the ether reacts to only the electron's acceleration.

Furthermore, water's resistance increases exponentially relative to a boat's velocity/acceleration, whereas the ether's resistance increases by an LTF with respect to only the election's acceleration.

What is more, since there are two directions of electron magnetic field spins (up and down), the spherical magnetic field must also involve two forms. So, as one form plows through the ether, the ether rotates then in one direction. And when the other type plows through the ether, the ether rotates in the opposite direction. These two categories of directional spinning ether are, in effect, the two opposite kinds of the magnetic fields associated with the electron.

APPENDIX J

THE QUANTUM NATURE OF MATTER AND ENERGY AS A FUNCTION OF THE ETHER

The intention of this appendix is to show how the existence of the ether is related to the formation of matter, the quantum nature of the atom and energy, the rest and relativistic inertial mass of the electron (matter), and finally, matter's interaction with electromagnetic radiation.

Introduction

Einstein's relativity theories and quantum mechanics (QM) are two distinct worlds. Moreover, their mathematical formulas are irreconcilable with one another. However, intuition, moreover, common sense tells us that the macro-world of relativity and the micro-world of quantum mechanics are a part of one common overall universe. Consequently, there ought to be one unified theory incorporating mathematics that describes both. Chapters 1 and 2 of this book titled *The Ether* gives explanation to how the presumption of the ether is related to the world of relativity. Therefore, the intent of this appendix is to extend the notion of the ether of PFSRT/PFGRT to the micro world of QM, thereby unifying both worlds. In addition, another objective is to demonstrate that the quantum nature of matter and energy are also a function of the ether.

Quantum Mechanics

Quantum mechanics predicts the outcomes of atomic particles, as well as subatomic physics, with extreme precision. However, the actual physical mechanism as to how this transpires is obscure. Essentially, there is a set of logical input concepts, as well as logical output observations, both represented by mathematical formula. Nonetheless, the visual cause-and-effect relationships, other than math is incomprehensible. Fundamentally, and for reinforcement, visually rational concepts represented by mathemati-

cal equations enter a black box whereby they are manipulated to produce other pictorial output concepts, also expressed by mathematical calculations. Even so, for those results, there are no intuitive logical three-dimensional cause-and-effect relationships, rather, only very complex mathematical formulas.

Here is a quotation by physicist Nick Herbert supporting that notion:

Quantum theory provides a method of calculating the results of any experiment we can imagine, but it gives us no picture of what is going on to produce these results. Quantum reality would be some kind of model or picture that explains the quantum results, some story we can tell ourselves about "what is really happening" behind the scenes. Nick Herbert, quanta@cruzio.com

In addition, some of the consequences derived from QM are irreconcilable with intuitive reality, such as the simultaneous existence of a single subatomic particle at two different locations.

This appendix utilizes an ether model to demonstrate that the quantum nature of matter and energy, as well as the micro world of QM, are actually a function of the ether. Furthermore, it uses common sense logic to demonstrate this fact.

To describe this postulate, a quark model was considered; however, the quark explanation is so complex, that it would be very difficult to grasp. Instead, a modified Bohr model of the atom is presented, generally, although not exclusively, involving the electron, whereby it represents matter. Bear in mind, the electron is a fundamental particle regarding both models. Therefore, the concepts used to describe this modified Bohr model can be equally applied to the quark model.

For simplicity of explanation, this appendix is divided into eight sections each of which describes the three-dimensional physical mechanism as to how the ether interrelates to the micro-world, including the quantum nature of light and matter.

J.1 Matter and Electromagnetic Radiation EMR as a Function of the Ether
J.2 Inertial Mass as a Function of the Ether
J.3 E = mc Squared as a Function of the Ether
J.4 The Quantum Structure of the Atom as a Function of the Ether
J.5 Double Slit Experiments as a Function of this New Theory
J.6 Matter and its Interaction with Electromagnetic Radiation (EMR) as a Function of the Ether
J.7 Acceleration of the Electron as a Function of the Ether
J.8 The New QM Theory Compared to Classic QM

Before proceeding, it should be noted that in order to explain these eight sections, there is considerable redundancy. This is because the different concepts presented utilize the same premises or postulates.

J.1 Matter and Electromagnetic Radiation (EMR) as a Function of the Ether

Einstein's relativity theories assume there is no ether. However, this presumption leads to irrational concepts, such as the twin paradox problem, as well as the quandary of simultaneity. Alternatively, chapters 1 and 2 of this book titled *The Ether* employ its existence to hypothesize a modified theory of relativity, whereby these irrationalities no longer exist, therefore, consistent with common sense. In the very same way, referring to the micro-world, if one posits the existence of the ether, this presupposition then simplifies the understanding of many atomic and subatomic phenomena. Most importantly, it unites both worlds.

The following descriptions are attributes (A through I) whereby light (EMR) and matter are pictured to be a function of the ether.

A. Electromagnetic radiation (EMR) is a wave of the ether, to some extent analogous to how water waves traverse through water. In addition, EMR consists of sequential alternating right-angled electric and magnetic waves, traveling at c. (See Figure J-1.) Furthermore, in one of its forms, it takes on the configuration of a packet of energy with a given length defined as photon or quantum.

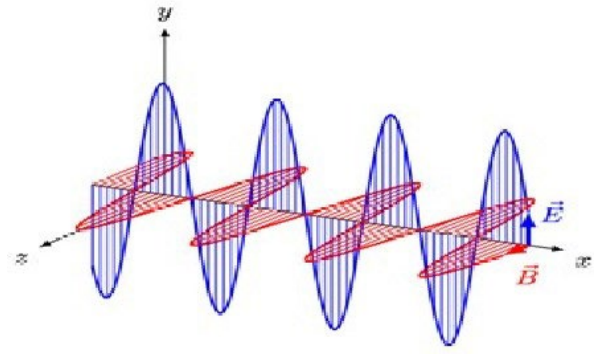


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Figure J.1 Electromagnetic Wave [Fair Use]

Figure J.1 illustrates alternating right-angled magnetic and electric fields. This, in combination with its given amplitude and length, is the photon.

B. An electron (matter) is essentially a reorganization of the electric and magnetic fields o f EMR. In other words, EMR's linear momentum traveling through the ether at (c) is converted into angular momentum. This is because it spins upon itself. As a result, it transforms into an electron, however, now at rest or near rest with respect to the ether. In addition, the EMR'S electric and magnetic fields reorganize, to form a central radiating spherical electric field surrounded by a circular magnetic field as illustrated below in Figure J.2.

Furthermore, this transformation only occurs with respect to a precise unit of specific energy, a quantum. As a conjecture, the direction of the spin of the EMR, as it transforms into an electron, could be related to the direction of the spin of the electron (e.g., up or down).

C. This process is even more complicated. For instance, Einstein's relativity theories posit that an electron at rest with the **observer** is only an electric field. In addition, it postulates that an electron with a velocity relative to the observer possesses both an electric field and a magnetic fi eld. Furthermore, the greater its linear velocity with respect to the observer, the greater is the magnetic field as a LTF.

D. On the other hand, presupposing the ether's existence, then an electron at rest with the **ether** consists of only a spherical radiating electric field. And an electron traveling at a velocity with respect to the ether possesses both a spherical electrical field and a circular magnetic field. Additionally, the greater the linear velocity, the greater is its magnetic field as a LTF. Furthermore, the plane of the magnetic field is oriented perpendicular with reference to its motion through the ether.

E. However, a more likely model is this: an electron at rest with the ether possesses both a central spherical radiating electric field and a circular magnetic field (spin magnetic field). Essentially, this is its primary structure. Now, in the setting where the electron is at rest with the ether, the circular magnetic field represents its magnetic moment (spin). In contrast, when an electron possesses a velocity with respect to the ether, this primary circular magnetic field then increases/enlarges (it becomes the velocity magnetic field). What is more, its plane becomes oriented perpendicular relative to its motion through space (ether) as portrayed in Figure J.2 below.

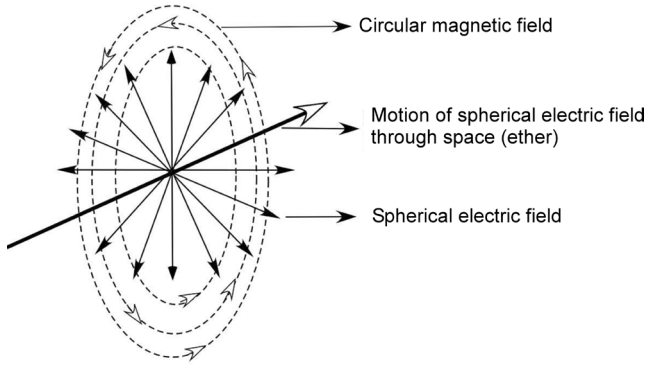


Figure J.2 Spherical Electric Field Surrounded by a Circular Magnetic Field

The electron consists of only a spherical central radiating electrical field along with a circular magnetic field, the latter with its plane oriented perpendicular relative to its motion through space (ether). There is no particle, only fields.

F. It is a well-known fact that the magnetic field, induced by an electron current located within a straight wire conductor takes on the form of a circle. This configuration is the sum of the shape of the magnetic field of each individual electron of that current. Consequently, logic then tells us, that the shape of the magnetic field around each of those electrons must also be that of a circle. Likewise for each electron, the plane of the circular magnetic field is oriented at a right angle relative to its motion through the ether, which is the direction of the current within the straight wire conductor.

This function is illustrated in figures J.3 and J.4. Observe that the summation of the magnetic field created by all of the single electrons, including orientation (Figure J.3), produces the typical circumferential magnetic field of a straight wire conductor containing an electron current (Figure J.4).

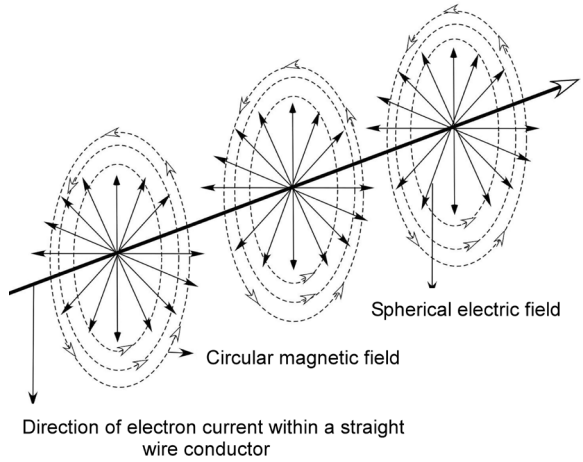


Figure J.3 Individual Electrons of a Current with their Associated Electric and Magnetic Fields

With reference to a straight wire conductor containing an electron current, that the summation of the circular magnetic field of each electron of that current is what produces the typical overall circumferential magnetic field, classically associated with that form of conductor.

Additionally, within the conductor, because there are an equal number of electrons and protons, there is no overall electric field, as these opposing electrical fields counteract one another.

Furthermore, all the other opposing magnetic fields produced by the electrons and protons, including the opposite spinning electrons, counteract one another, with the exception, as above, of the circular magnetic fields generated by all the similarly aligned unpaired outer shell electrons traveling linearly in the same direction at an increased velocity relative to the ether—this is the electron current with its associated magnetic field.

→Bear in mind that the electron current is a net current since the electrons travel from atom to atom within the conductor very slowly but orbit their nuclei very rapidly←.

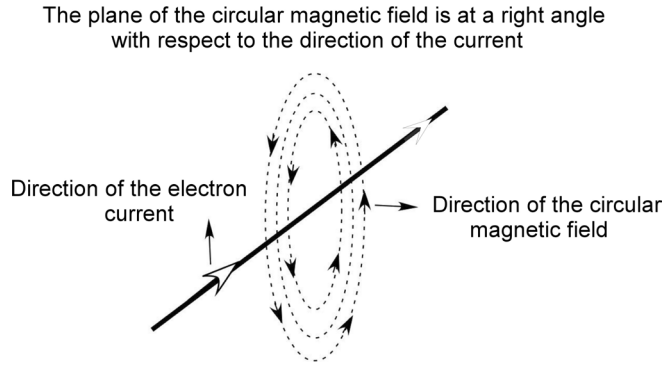


Figure J.4 Summation of Magnetic Fields

The sum of all the fields of the electrons in Figure J-3 produces the overall magnetic field of the current as depicted above in Figure J.4.

G. The electron is not a particle with associated radiating fields—rather, the field or fields are the electron—just as EMR consist of only alternating fields. The notion of a particle is only a perception, which occurs when the fields, which are the electron, then interact with the fields (electrons) of the measuring instrument. So, for that measuring device, this interaction then produces a *quantum* change in its orbital shell structure. Essentially, the quantum interaction involving only fields located within the detector's electron shell structure is what is then perceived as a particle.

H. To recap, the constituents of matter (electrons, protons, quarks, etc.) can morph into electromagnetic radiation and vice versa. Basically, both matter and EMR are created from the same fundamental electric and magnetic fields, although with a dissimilar arrangement, along with a different velocity relative to the ether. In addition, this transformation occurs with respect to a given packet of energy. For example, given the proper circumstances, a photon (EMR) traveling at c, moreover, as part of the ether, curls and spins upon itself, thus transforming into a spinning electron (field) now at rest with the ether. Because this bidirectional transformation only occurs at specific values of energy, it is then a part of QM.

I. In the same way, all other subatomic structures (e.g., protons, quarks, etc.) are fashioned from electromagnetic radiation (fields), as they too are interchangeable with EMR.

In summary, what all this signifies is that space, a vacuum, or what one would consider as "nothing at all" is, in fact, by far the most fundamental "stuff" of the universe. Now, if this stuff (or ether) forms a wave (energy) that traverses through itself at c, we define it as electromagnetic radiation. And if at certain fixed packets of energy, instead of traveling with a linear velocity at c, it curls upon itself, moreover, spins with angular momentum, then it transforms into matter (e.g., electrons). The matter of the universe is formed from what the majority of individuals would consider as "nothing at all," or expressed in other lexicology, the ether. If one thinks about it, the term "ether" makes more sense, given that it signifies something rather than nothing.

J.2 Inertial Mass as a Function of the Ether

This new theory posits that relative to the ether, when the velocity of an electron increases linearly, its relativistic inertial mass then increases by an LT function. Similarly, with reference to the ether, this theory presumes that as the velocity of an electron increases linearly, then in the same way, its circular magnetic field increases by an LT function. Take note of the identical relationship. For this reason, the author postulates this theory: the electron's increased magnetic field is what produces, and is, the increased relativistic inertial mass. This is compared to its rest inertia mass, which occurs whenever the electron is at a 0 velocity with respect to the ether.

Dr. Marmet's abstract proposing this hypothesis is given below:

Relativity theory gives a relationship predicting the increase of mass of relativistic moving particles, but no physical model has been given to describe the fundamental physical mechanism responsible for the formation of that additional mass. We show here that this additional kinetic mass is explained by a well-known mechanism involving electromagnetic energy. This is demonstrated taking into account the magnetic field generated b y a moving electric charge, calculated using the Biot-Savart equation. ***We show that the mass of the energy of the induced magnetic field of a moving electron is always identical to the relativistic mass deduced in Einstein's relativity. Therefore, the relativistic parameter can be calculated using electromagnetic theory.***

Also, we explain that in order to satisfy the equations of electromagnetic theory and the principle of energy and momentum conservation, toroidal vortices must be formed in the electric field of an accelerated electron. Those vortices are also simultaneously compatible with the magnetic field of the Lorentz force and the well-known de Broglie wave equation. This leads to a physical description of the internal structure of the electron in motion, which is at the same time compatible with the Coulomb field, the de Broglie wavelength equation, mass-energy conservation and with the magnetic field predicted by electromagnetic theory. That realistic description is in complete agreement with all physical data and conventional logic. The paper concludes with an application, which is a first classical model of the photon, fully compatible with physical reality, without the conflicting dualistic wave-particle hypothesis.

This inertial mass proposal and quote were obtained from the article titled *Fundamental Nature of Relativistic Mass and Magnetic Fields* authored by Paul Marmet, published in the International IFNA- ANS Journal "Problems of Nonlinear Analysis in Engineering Systems," No.3 (19), Vol.9, 2003, Kazan University, Kazan City, Russia.

To recap, whenever an electron's velocity increases linearly with respect to the ether, then the mag- netic field induced by this process increases by an LTF. And so, for that electron, this effect produces an increased resistance to its further acceleration by force = increased relativistic inertial mass. The elec- tron's relativistic inertial mass is a function of its magnetic field. In turn, that magnetic field is a function of its velocity relative to the ether.

This unique concept is easily perceived when visualizing a single electron, however, not apparent with large non-ionic matter (object). However, recall, typically matter is constructed from an equal number of electrons and protons containing opposite electric fields. Therefore, they counteract one another. As a result, for that object, the overall electric field is null.

In addition, the object's protons compared to its electrons are associated with unequal magnetic fields. Recall that the electron's magnetic field is greater than the proton's field. However, within the atom, electrons and protons also possess two types of symmetrically opposite directional spins. So overall, within the object, there is an equal number of opposing magnetic fields. As a consequence, all these complex opposing magnetic fields negate one another. And for that reason, and for that object (matter), there is also no overall magnetic field.

Relative to the ether, when matter (object) is accelerated by force, resulting in an increased velocity (e.g., 0.1c to 0.5c), its relativistic inertia mass then increases. So, with respect to this new theory, how does this transpire? Here is the reasoning. While increasing its velocity relative to the ether, moreover, within the object, there is a symmetrical increase involving all of the counteracting magnetic fields, produced by all of the protons and electrons. And so, taken as a whole, even though this increase exists (the inertial mass increases), the opposing magnetic fields still mask one another. In effect, for that accelerated object, there is no apparent overall magnetic field. Nevertheless, the remaining effect is an in-

crease in its relativistic inertial mass.

Note, the unpaired electrons have no corresponding counteracting opposing magnetic field, but as they randomly orbit the nucleus, there is no net direction. Therefore, referring to these specific electrons, there is no net magnetic field.

J.3 $E = mc^2$ as a Function of the Ether

Einstein's equation of $E = mc^2$ posits that energy and matter are equivalent, moreover, interchangeable. Mathematically, this is straight-forward. Nevertheless, it is very difficult to visualize a non-mathematical physical mechanism as to how this actually transpires. On the other hand, bearing in mind this new theory, it is fairly easy to envision, for example, regarding the electron.

Fundamentally, it involves two separate functions.

The first is the transformation of electromagnetic energy into subatomic particles (electron). This process occurs as a function of a specific packet of energy, then producing the inertial rest mass of the electron and at a 0 velocity relative to the ether. Remember that the electron is an electric spherical field/force of *energy*. This is of our simplified model.

The second process: as the rest inertial mass of an electron increases its linear velocity with respect to the ether, its magnetic field then increases by an LTF. In essence, the increased magnetic field/force, which is again *energy*, is the electron's relativistic inertial mass.

When observing both scenarios, one can easily picture the actual physical mechanism whereby *energy* is related to the rest inertial mass and the relativistic inertial mass of the electron, or in other terminology, how $E = mc^2$. Bear in mind if everything is made up of only fields, then matter is a form of energy and not vice versa (as there is no particle/matter—only fields).

J.4 The Quantum Structure of the Atom as a Function of the Ether

Again, this new model assumes that both matter and EMR are composed of only electric and magnetic fields. Additionally, it uses the presumption of the ether, to posit a modified Bohr model of the atom, analogous to the electron cloud model of the atom (QM). So as illustrated in Figure J.5, the classic Bohr Model on the left is transformed into the modified Bohr model on the right. Furthermore, this section describes how the new proposed model is consistent with the quantum nature of matter and energy.

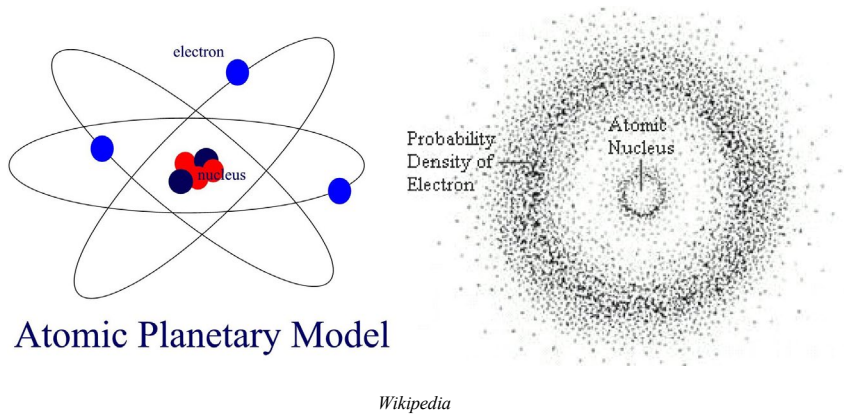


Figure J.5 Bohr Model vs. the Electron Cloud Model [Fair Use]

In order to understand this last premise, assume the following attributes.

A. Again, matter (electrons and protons) is a product of electromagnetic radiation (EMR), the latter of which, when given the proper circumstances, instead of traversing linearly through space (ether) at c, curls, moreover, spins upon itself, transforming into matter (charged particles [fields]) with spin. This includes positively charged protons, as well as negatively charged electrons, which then attract one another.

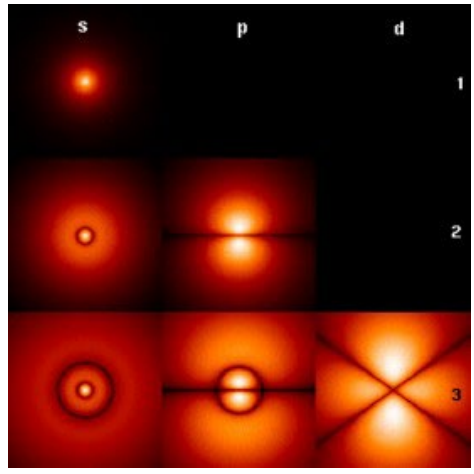
B. An electron is made up of only electric and magnetic fields. In addition, neither field is located at a precise point with respect to space (ether). In theory, these fields extend to infinity, although this may not, in fact, be true. Regardless, the electron's two kinds of fields are spread out over a volume. Essentially, there is no one specific point with respect to space (ether) whereby one can say the electron exists, rather only a region.

C. When electrons and protons, due to their opposing electric fields, attract, therefore, orbit one another to eventually form an atom, their magnetic fields, at the same time, interact in a very complex manner. Bear in mind, the magnetic fields generated by protons (quarks) are significantly weaker compared to that produced by electrons. Nevertheless, the opposite spins of the electrons within orbital shells have equal counteracting magnetic fields. Likewise, there are equal opposing magnetic fields within the nucleus. So, all of this is also a part of the complex interactions as well. As a result, an atom consists of an overall equilibrium of all of its electric and magnetic fields, which are in a stable state; called an atom.

D. An electron does not orbit the proton (nucleus) similarly to the way planets orbit the Sun. Instead, it orbits the nucleus in a "random-like" orbital pattern, moreover, at an extremely rapid velocity. Again, the electron's magnetic field is spread out over a volume. So given these two assumptions of rapid random motion and lack of locality, then integrated over a short period of time, as an electron orbits its own nucleus, it then forms a cloud-like pattern surrounding it. This is analogous to the QM model of the atom.

E. Effectively, one can only determine a probability of the electron's location (position vis-á-vis QM), seeing as it is spread out over a region. Additionally, one can only determine a probability of its velocity (momentum vis-á-vis QM), since it travels in a random pattern, moreover, with today's equipment, too fast to accurately measure. Observe, by using these presumptions, the classical Bohr Model transforms into the modified Bohr Model, which is analogous to the cloud model of QM (Figure J.5).

F. This new theory posits that the complex interacting fields, created by all of an atom's proton and electrons are in a stable state of equilibrium. This produces an atom, since this is what holds its constituents together. In contrast, some other states are unstable. So, in that case, those configurations decay into another equilibrium point or points and fields. In addition, each of the elements is associated with a specific unique equilibrium. Furthermore, for some elements, the stable interactions are extremely complex. So, as shown in Figure J.6, these kinds of elements possess odd configurations, such as a donut or a bar bell, once again just like QM. Incidentally, the different de Broglie wavelengths associated with the orbiting electrons are a part of the stable equilibrium configuration, as well.



Wikipedia

Figure J.6 Complex Interacting and Orbiting Electric and Magnetic Fields [Fair Use]

Fundamentally, each element is associated with a specific equilibrium point, represented by diverse configurations of their complex interacting and orbiting electric and magnetic fields as illustrated above.

G. In the same way, molecules, as well as other larger structures, including the magnetic domains of a permanent magnet, are also stable configurations involving huge numbers of atoms.

H. This same model is applicable to protons, neutrons, as well as quarks (all are actually purely fields). For example, each subatomic unit of the nucleus possesses its own electric field, magnetic field, weak force field, and strong force field. All these complex fields interact to form the nucleus but only with respect to a specific stable equilibrium. This hypothesis makes more sense if one presupposes that the quarks orbit each other, or alternatively the protons and neutrons orbit each other. Essentially, these specific equilibrium stabilization points associated with different numbers of protons and neutrons represent the nuclei of the different elements.

I. Recall, some elements decay into other elements, particles, and EMR. So, in this setting, the equilibrium point for that particular type of atom is not absolutely stable over time. Generally, the complex interacting fields are stable. Nevertheless, on an extremely rare occasion, as they interact, the total configuration assumes an unstable form. When this happens, a subatomic unit, a photon, or even both is/are ejected from the nucleus. These are all fields. Simultaneously, the remaining subatomic units/fields rearrange to form a new stable equilibrium point or points. Alternately, for some elements, rather than rarely, this function occurs rapidly without delay.

J. These equilibrium points are a function of how matter (fields) and EMR (fields) interact, which in turn, is a function of the quantum nature of the ether.

J.5 Double Slit Experiments as a Function of this New Theory

Again, matter (electrons and protons) and energy (photons) are constructed only from fields, which exist over a volume of space, moreover, not with regard to a specific point relative to space (ether). This effect explains the outcome of the double slit experiments, pertaining to the dual waveform/particle nature light (EMR).

This is because the spread-out radiating **fields** of EMR, which are also waves, traverse through both slits simultaneously. Moreover, after this single wave passes through, it then functionally becomes two separate interacting waves (fields). As a result, at the detector surface, they interfere with each other to form an interference pattern. Where the interference of the two waves possesses sufficient energy to affect

a quantum jump of an electron (field) in one of the detector's orbital shells, it turns bright, and where it does not, it remains dark. The resulting alternating pattern located at the detector is interpreted as wave.

In contrast, when there is only one slit, after the EMR passes through, it still is a single wave, so at the detector's surface, no interference pattern forms. Again, the detector only turns bright if that single wave (field) possesses enough energy to produce a quantum jump of an electron (field) in one of its orbital shells. Otherwise, it remains dark. This outcome occurs at only one specific location with respect to the detector's surface and is perceived as a particle, even though there is no particle, only fields.

As an aside, relevant to all that exists (EMR, electrons, protons, etc.), besides the ether, there are only fields, moving fields (waves) quantum entanglement, and quantum interactions. What is more, there is no particle. Given that basic assumption, then with reference to the dual particle/wave double slit experiment, contemplate this.

- The wave function of QM (the →mathematical probability/distribution← of a single-point-like particle simultaneously existing at different locations relative to an overall region) is somewhat equivalent to the actual physical spread-out field/fields of the →photon/electron/proton← (the field/fields are actually physically present/distributed over a given area all at once).
- The interaction of a part of that overall field, at a specific point location, with the field (electron) in the shell of the detector corresponds to the collapse of the waveform, then defined as observed.

1. Given that above, postulate this. As the source photon/electron, etc. passes through both slits simultaneously (because there are only fields), it then divides into two separate, opposite, unequal quantum entangled structures (fields). There is a larger fraction and a smaller fraction. This is not like the classic equal opposite quantum-entangled structures (e.g., equal electrons of opposite spin).
2. The entanglement of the unequal entities produces the interference pattern at the detector's surface —then defined as a wave.
3. On the other hand, whenever one of two "unequal entangled fields" interacts with a measuring/recording device other than the detector (prior to the detector—again defined as disturbed/observed), the interference pattern//entanglement then ceases (decoherence). If this occurs, the interference pattern vanishes. This is because, at that time (after being observed by other than the detector), if either of the two or both of the now-untangled, unequal field/fields still exist, moreover, possess enough energy to effect a quantum jump of a field (electron) in a shell of the detector, it turns bright, and if not, it remains dark. This function produces at the detector's surface two separate areas of brightness corresponding to the two separate slits (not an interference pattern because there is now no interference pattern/entanglement)—then defined as a particle.

So, when endeavoring to comprehend the double slit dual particle/wave experiment →think only of extremely complex interactions← of fields, moving fields (waves), quantum interference pattern, and quantum interactions—again, there is no point-like particle.

J.6 Matter and Its Interaction with EMR as a Function of the Ether

At this juncture, let us describe what happens when EMR (a photon) interacts with an orbiting electron of an atom/molecules. Essentially, the EMR adds energy, or in other words, orbital velocity to that electron, both relative to its own nucleus and with respect to the ether (PFSRT). Now, if the electron's increased orbital velocity is sufficient to achieve a new equilibrium configuration, then it jumps into the next outer shell. What this signifies is that relative to the ether, the outer shell electrons possess a greater velocity compared to the inner shell electrons, and as a result, a larger magnetic field. For that reason, and for that electron, there is then increased relativistic inertial mass. Moreover, given that the outer shell electrons possess a larger magnetic field, then by necessity, the shells must progressively become wider/more volumetric the further from the nucleus. Additionally, generally, there are more electrons per shell in the outer shells compared to the inner shells. So, this is a part of the equation as well.

Conversely, if an outer shell electron falls back into a lower inner shell, with an ejection of a photon (field), its magnetic field then decreases; as such, it gives up some of its relativistic inertial mass/velocity relative to ether.

EMR in one of its forms exists as a discrete unit called a photon or quanta. For example, electrons and protons are produced from given energy packets of EMR and vice versa. Additionally, when EMR is absorbed by one of an atom's electrons or alternatively is emitted, this can only occur if the energy

(velocity) added/lost is sufficient to produce a new equilibrium state, defined as a quantum jump. What this indicates is that all chemical reactions are, in fact, quantum interactions. So, the packet form of EMR (photon) is a function of the quantum nature of the atom.

On the other hand, EMR in another of its forms exists as an uninterrupted wave of any wavelength, frequency, and amplitude. For instance, a free electron persistently vibrating with respect to space (ether) generates a continuous electromagnetic wave devoid of packets called photons.

Fundamentally, the point of this last mental exercise is that EMR can exist as a continuous wave of fields or as a discrete length of fields, then called a photon.

J.7 Acceleration of the Electron as a Function of the Ether

Whenever a solitary electron is angularly accelerated or decelerated, it then emits synchrotron/Bremsstrahlung radiation, nevertheless, only for this limited duration of acceleration/deceleration. This new theory posits that it is the interaction of the angularly accelerated/decelerated electron with space (ether) that creates this form of radiation. In contrast, generally when an electron orbits its own nucleus, it undergoes angular acceleration, yet there is no emission of EMR.

Standard physics cannot reasonably explain this conundrum. However, by assuming an ether model, it can be clarified.

For instance, given the proper circumstances, as an outer shell electron orbits, therefore, accelerates, around its own nucleus, it can potentially emit a photon. If so, then simultaneously, it decays into the next inner shell. However, this is assuming it is open and not occupied by another electron. Otherwise, it cannot do so. In contrast, an inner shell electron cannot jump into an outer shell without the input of energy.

To recap, as a function of orbiting its own nucleus, an outer shell electron undergoes angular acceleration. Moreover, in doing so, it can potentially emit EMR (photon) akin to the example of a solitary accelerated electron (e.g., cyclotron). If this occurs, then it drops down into a lower shell, with a lower energy/velocity. However, notice this: by assuming no open lower shell, the electron is blocked from this pathway. So in that setting, it does not emit EMR. Therefore, in the scenario where the atom exists in its lowest energy state, it cannot spontaneously emit photons as the electrons orbit (acceleration) around their own nucleus.

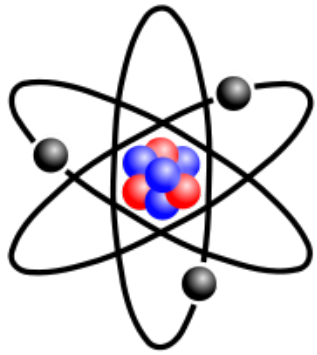
In summary, this conceptualization gives explanation to the reasoning for why an electron, while orbiting its own nucleus, does not in all instances produce EMR, analogous to the scenario of a solitary angularly accelerated electron. Additionally, it explains why an atom tends to spontaneously decay into its lowest electron orbital energy configuration. This model is only a very simplified version of what really transpires, given the fact that the atom possesses an extremely complex internal structure

J.8 The New QM Theory vs. the Classic QM

This new QM model is analogous, although not identical, to classic QM, for there are numerous similarities, as well as differences, some of which are ascribed below.

A. Referring to QM, the specific properties are present only when observed, whereas with regard to the new theory, the properties are intrinsic to its own structure, moreover, not dependent upon the observer.

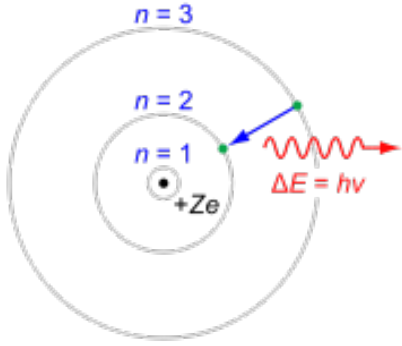
B. Both this new theory and QM involve quanta as depicted in figures J.7 and J.8 below. However, unlike QM, the quanta of this new theory are all a function of the ether.



Wikipedia

Figure J.7 Electrons and Protons of an Atom are Derived from Discrete Packets of EMR (fields). [Fair Use]

All of the electrons (fields) and protons (fields) that make up an atom are derived from discrete packets of EMR (photons or quanta). The atom forms due to complex equilibrium interactions involving electric and magnetic fields, which are only stable at specific configurations. Discern that these interactions are all quantum in nature, moreover, all quanta are ultimately derived from the ether.



Wikipedia

Figure J.8 Emission of a Photon [Fair Use]

As the electron (field) drops from the outer shell into the middle shell equilibrium state, it surrenders some of its magnetic field in the form of an emitted packet of EMR called a photon. Furthermore, because the electron's orbital velocity relative to the ether then diminishes, its relativistic inertial mass also decreases. Again, observe these are all quantum interactions; moreover, all quanta are ultimately derived from the ether.

C. Assuming the new QM model of energy and matter actually represents fact, perhaps classic QM is only a mathematical working representation of this reality. Nevertheless, QM does not depict actual physical structures or the visual mechanism of their interactions. Essentially, even though classic QM accurately predicts outcomes, it does not precisely describe the actual physical structures of either the atom, or for that matter, EMR. Conceivably, this dichotomy is the rationale for why it is difficult to trans-

late what is essentially the advanced mathematics of classic QM into words that actually make common sense.

Just because we have a mathematical formulae that allows us to calculate and predict properties of an atom, this does not mean that the wave function is a mathematical description of the atom or, worse still, that the waveform is the atom. (Quantum: A Guide for the Perplexed, pg. 80, by Jim Al-Khallili)

Conclusion

Quantum mechanics (QM) effectively predicts the outcome of particle physics and subatomic physics with extreme accuracy. In addition, it is the basis for countless successful modern-day inventions. Therefore, it describes the true function of the microworld, nevertheless, strictly mathematically, not structurally in three-dimensions. On the other hand, this new theory is a visual model of that same microworld. Fundamentally, both theories describe the exact same outcome; one mathematically, whereas the other visually. So, presupposing one could describe the new theory with the use of mathematics, the same cause-and-effect relationships would emerge. And so, at that time, it would be equivalent to classic QM. In practicality, classic QM has been so successful/practical/profitable that in the author's opinion, it will be extremely difficult to overturn, moreover, replace. Nevertheless, the major advantage with reference to this new theory is this: If one can visualize the actual cause and effect interactions three-dimensionally, then one ought to then be able to conceive of new and novel ideas, and as a result, build new inventions never before contemplated.

APPENDIX K

ATOMIC CLOCKS, THE VELOCITY OF LIGHT AND THE EGF, ECF (ETHER)

In this appendix, all theories are based on the assumption that the Earth-Centered Non-Rotating Inertial Frame/gravitational field/inflow of space is the local preferred frame for the speed of light on Earth, as well as the local preferred ”rate of time” frame on Earth. Everything else depicted in this section derives from this basic assumption. Keep in mind that all three terms are synonymous. Additionally, it should be noted that the term ”Inflow of Space” (ether) as defined in Chapter 2 of *The Ether* is new and not generally accepted by mainstream physics. Therefore, for ease of understanding, generally, although within this chapter not exclusively, the author will use the phrase ”Earth-Centered Non-Rotating Inertial Frame” (ECF) or the Earth’s Gravitational Field (EGF).

The intent of this appendix is to demonstrate how both the rate of time (atomic clocks) and the velocity of light interact with the ECF/EGF in such a way as to maintain the →perception← that the speed of light is c relative to the observer.

In order to calculate the velocity of light by means of two atomic clocks, by necessity they must initially be synchronized at the same location, and subsequently, separated from one another. This determination is a function of the physical distance between the two clocks, correlated to the time interval traveled by the light between emission and detection.

However, as already stated, what many scientists overlook is that the ECF, EGF is the local preferred frame for both the velocity of light as well as the rate of time on Earth, furthermore, as to how this dual function affects the outcome of that measurement.

In addition, recall the EGF does not rotate along with the Earth's axial spin velocity. Furthermore, remember, the greater an object's velocity, relative to the EGF (ether), the slower the rate of time (Hafele and Keating).

So given the postulates as just presented, if the two atomic clocks are synchronized at one specific location on the Earth's surface, and remain there, they stay synchronized. In contrast, if they are then separated, they de-synchronize. The following descriptions depict the reason why.

Assume, as Hafele and Keating established, that the EGF is the local preferred frame for the rate of time on Earth. Additionally, presume the two clocks are synchronized relevant to the exact same mid-latitudinal point on Earth. Now, so long as they are together, they remain synchronized, because both clocks travel along with the Earth's axial spin at the same velocity vis-á-vis the EGF.

In contrast, after synchronization, if one clock is transported directly eastward for a given distance, then during that motion, its velocity relative to the EGF increases, so its "tic rate" decreases. Now, after the separation is completed, the east clock is once again at rest with the rotating surface of the Earth. So at this time, the tick rates are now equal. However, that clock is now desynchronized relative to the stationary clock. There is now a "time lag" of the east clock compared to the stationary clock.

Alternatively, if one clock is transported directly westward for a given distance, then during that motion, its velocity relative to the EGF decreases, so its tic rate then increases. Now, after the separation is completed, the west clock is once again at rest with the rotating surface of the Earth. So, at this time, the tick rates are now equal. However, the west clock is now desynchronized compared to the stationary clock. There is now, in this case, a "time advancement" of the west clock compared to the stationary clock.

Here is where it gets complex. But first recall the EGF is the local preferred frame for both the velocity of light and the rate of time on Earth.

Presuppose that the stationary clock emits light towards the clock that was transported eastward. So, as a function of the Earth's eastward axial spin velocity within the EGF (ether), it takes light more time to reach that clock, because it travels a greater distance through the ether (ECF). But remember, there is a time lag of the east clock compared to the stationary clock. As a result, the two functions negate one another in such a way that the velocity of light remains at c relative to the observer.

Alternately, presume that the stationary clock emits light towards the clock that was transported westward. In this instance, as a function of the Earth's eastward axial spin velocity, within the ether (EGF), it takes light less time to reach that clock, because light travels a shorter distance through the ether (ECF). But recall, there is a time advancement of the west clock compared to stationary clock. So, the two effects negate one another, and the velocity of light once again remains at c relative to the observer.

Recognize, regarding this example, the rate of time and the velocity of light always interact together, vis-á-vis the EGF, in such a way as to maintain the observer's discernment that the velocity of light is c. However, this →perception← of c is actually not relative to the observer but rather is a function of the ether (EGF).

The next section illustrates how the EGF, ECF effect an atomic clock's rate of time. The website below contains a video describing an experiment supporting the concept that the "rate of time" of an atomic clock is a function of its velocity relative to the Earth-Centered Frame (EGF) just like the Hafele and Keating experiment.

https://www.youtube.com/watch?v=G-7ImOWnxQ8

However, it is a more precise experiment. Nonetheless, the author of the website describes the experiment as a function frame dragging. Alternatively, it is this author's opinion that his conclusion is en erratum. The experiment actually demonstrates differential "time dilation" of an atomic clock as a function of its velocity relative to the Earth-Centered Frame/Gravitation Field/ Inflow of Space/Ether.

As a corollary, an atomic clock positioned at the equator tics slower (1,000 mph relative to the EGF, ECF, ether) compared to an identical atomic clock located at a higher latitude ($<$ 1,000 mph with respect to the EGF, ECF, ether). This outcome is a function of their different velocities relative to the non-rotating ether (EGF, ECF).

Again, referring to this concept, as a thought experiment, which could actually be implemented, assume two atomic clocks are synchronized at one location on the Earth's equator. Next, transport one clock

directly north to a mid-latitude position. During this motion, the transported clock will de-synchronize with the equatorial clock. Nonetheless, it is not that simple for the following reasons. The velocity of the surface of the Earth at the equator, relative EGF is 1,000 mph, but up north < 1,000 mph, let's say for purposes of this example 500 mph.

The actual northward motion of the transported clock produces a time lag compared to the equatorial clock. However, the northern clock possesses less velocity, vis-á-vis the EGF, than the other clock. Therefore, its "tic rate" is faster than the equatorial clock. So, when both clocks are in place, their tic rates then differ, moreover, the de-synchronization increases over time. This divergence and differential tic rate could be measured by an orbiting satellite as portrayed in the above website.

This last section describes a variation of the MMX, which could actually work. Presuppose that the velocity of light is measured over a given distance with the use of one atomic clock and a mirror, a two-way speed of light experiment. The light is emitted from the position of the clock, travels to the mirror, and subsequently, is reflected back to the same clock, where it is detected. The time interval correlated to the distance gives the velocity of light. If the EGF is the preferred frame for light, then just like the MMX, there ought to be a time difference depending on whether the experiment is oriented N-S, S-N (cross-wind arm of the MMX) or E-W, W-E (to-and-fro arm of the MMX).

Unlike the MMX, whereby from the frame of the half-silvered, anti-symmetrical/anti-asymmetrical compensatory changes of wavelength, as a function of reflected/returning light beams renders the experiment silent as to whether or not the ether exits (as classically performed/interpreted), this somewhat analogous experiment can prove whether or not it exists. Nevertheless, there is one caveat. The author does not know if atomic clocks are sensitive enough to make this determination.

In conclusion, both the rate of time and the velocity of light interact with the EGF (ether) in numerous ways, which in some cases →mimics← the notion that the speed of light (c) is always relative to the observer, but in other instances proves that both the velocity of light and the rate of time are actually a function of **the ether** (EGF).

APPENDIX L

ADJUNCT TO EPILOGUE OF CHAPTER 3

Appendix L is an adjunct to the epilogue of Chapter 3. Before evaluating this appendix, please review that chapter, especially the alternative explanation (hypothesis) of the MMX involving opposing counteracting *anti-symmetry* of the returning wavefronts of the two arms from the frame of the half-silvered mirror, thus preventing a fringe shift during rotation. This appendix is divided into four subsections as imparted below.

1. The classic/standard incorrect *theory* of the interpretation of the MMX, as well as the original proposed alternative *hypothesis* as presented in Chapter 3, whereby for the latter, there are opposing counteracting **anti-symmetrical** wavefronts of the two arms, from the frame of the half-silvered mirror, thus preventing a fringe shift during rotation.
2. A second alternative proposed *postulate* described in Chapter 3, wherein counteracting **anti-asymmetrical** opposing wavefronts, in the two arms, from the frame of the half-silvered mirror, produce an interference pattern, moreover, with a fringe shift during rotation. However, the magnitude of this shift is significantly less compared to classic/standard incorrect *theory* of the AMX. Accordingly, it can be differentiated from that classic explanation. →The postulate is most likely the correct and true idea/notion/function←.
3. Potential experimental tests relevant to the different theories.
4. Conclusion.

L.1 The Standard Classical Theory and the Original Proposed Alternative Postulate of Chapter 3

Again, before reading this subsection, a perusal of Chapter 3 is recommended. A review of the pertinent portions of Chapter 3 is now presented.

The original classic MMX theory and the proposed anti-symmetrical alternative hypothesis as presented in Chapter 3 are not easily visualized. For if they were, the alternative hypothesis would not have been so easily overlooked. For that reason, a detailed explanation of those concepts is now provided as offered below in Figure L.1 and the following dissertations. Assume in all the following examples, equal physical lengths of the arms.

A. First, the proposed hypothesis will be re-explained.

B. Second, the classic incorrect theory and comparison with the hypothesis.

A. Re-explanation of MMX Proposed Hypothesis

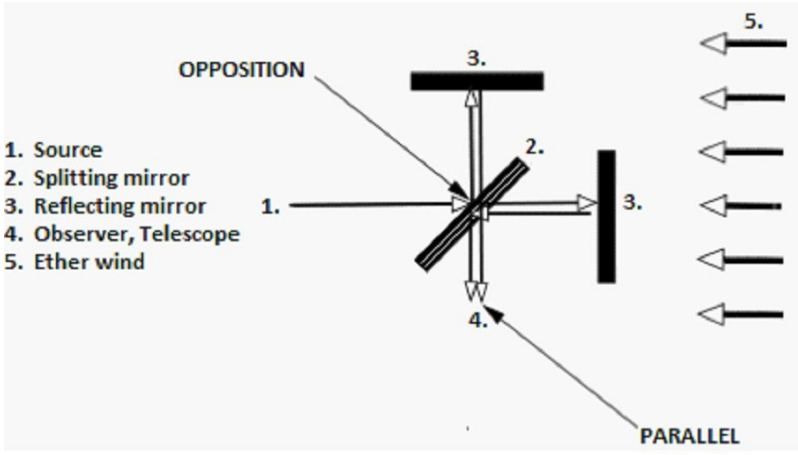


Figure L.1 Explanation of MMX Concepts [Fair Use]

Proposed correct hypothesis—Figure L.1

A single beam of light is emitted from the source (1). This light beam is then divided into two separate streams by the half–silvered mirror (2). They then travel to the peripheral full mirrors (3). Subsequently, the full mirrors then reflect the beams back to the half–silvered mirror. Here is the crucial point. When the returning reflected light beams first intersect, then interact (interface), at the half–silvered mirror, moreover, at a right angle, this is where the interference pattern is first formed. This interaction is a function of two light beams traveling in physical opposition——not mathematically parallel as a function of time. So, from the reference frame of the half–silvered mirror and during rotation, as one light beam progressively gains wavelengths (distance*), while the other beam symmetrically, progressively loses an equal number of wavelengths (distance*), then the interface of the two waves remains unchanged. This means the interference pattern also remains unaffected. In essence, during rotation, the (distances*) change, but the interference pattern does not. Then, from the half–silvered mirror to the detector (observer), the two beams physically travel parallel in the same direction. Moreover, they are fixed relative to one another, since at this time, they both are traveling through the same ether (distance*). Given all of the above, then as a function of the rotation (MMX), even in the face of the ether wind, there is no fringe shift.

B. Comparison of The Classic Incorrect Theory with the Proposed New Hypothesis

The next two figures with their following captions depict the classical, although incorrect, theory of the MMX (Figure L.2) followed by the proposed correct hypothesis (Figure L.3).

The Figure L.2 depicted below denotes the classic incorrect parallel theory.

Parallel *(time) interacting light waves*
(incorrect interpretation)

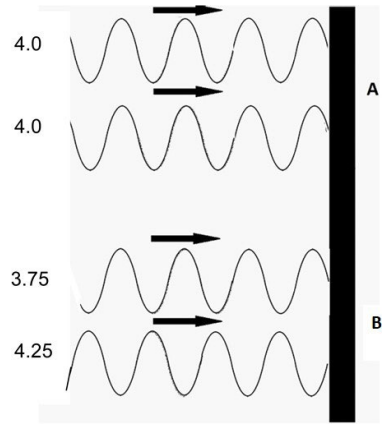


Figure L.2 Incorrect Theory of the MMX

→There is a fringe shift between A and B←.

.

- *Assume an ether wind with equal physical lengths of the arms.*
- *(Distance*) = distance of the light through the ether = interval of time.*
- *A - Top 45 degrees relative to the ether wind.*
- *B - Bottom 0 or 90 degrees relative to the ether wind.*
- *Vertical rectangular bar represents the observer/detector.*
- *Take note, relative to 45 degrees vs. (0 degrees or 90 degrees), there is anti-symmetry (gain vs. loss) of the number of wavelengths with respect to the two arms. However, for simplicity of explanation, only one symmetry is shown in this figure.*
- *The figure depicts parallel waves but only as a representation of time with respect to the equations of the MMX.*

Incorrect Parallel Interpretation—Defined as the Theory—Figure L.2

Figure L.2 as represented above is the classic/standard incorrect theory of the function of the MMX. The assumptions presented are false. Therefore, the physics described below is then incorrect. Classically, it is assumed, relative to the two arms, that the interference pattern is formed at the detector (observer) as a function of two interacting parallel waves, traveling in the same direction their entire (distances*); however, parallel only expressed mathematically as a function of time in the MMX equations.

- Position A. (45 degrees) At this position, the two light waves are in-phase, since with respect to the two arms, the ”intervals of time” (distances*) are equal.
- Position B. However, after rotation from 45 degrees, at 0 or 90 degrees (B), they are out of phase, since in this setting, relative to the two arms, the time intervals (distances*) are unequal. Therefore, an interference pattern forms.

The interference pattern forms, because during rotation, one wave gains an interval of time (distance*), while the other wave loses an interval of time (distance*). This process then reverses itself every 90 degrees. As a result, over 360 degrees of rotation, at the location of the detector, a fringe shift is produced

in the form of a sinusoid. All of this is assuming, relative to the two arms, that the two light waves are traveling parallel (expressed as time in the MMX equations) in the same direction their entire (distances*), then recombine at the location of the detector (observer). Both assumptions are false.

→Bear in mind that the gain versus the loss of wavelengths between 45 degrees compared to 0 or 90 degrees is not numerically equal as shown in the figure above but rather unequal. However, for simplicity of visual appreciation presented as equal (gain vs. loss). This alteration does not change the underlying principle as illustrated←.

The Figure L.3 depicted below again represents the proposed hypothesis.

Opposing *interacting light waves*
(correct interpretation)

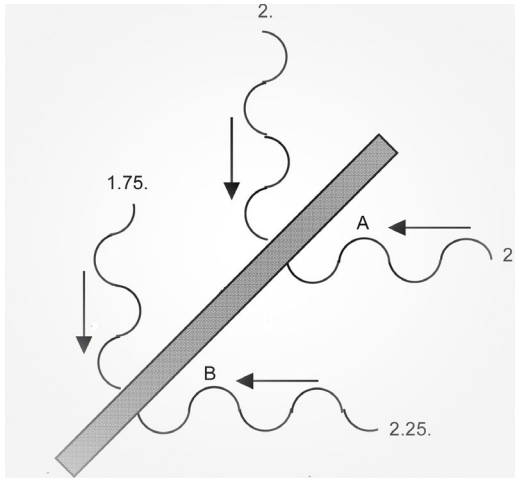


Figure L.3 Proposed Correct Hypothesis [Fair Use]

There is no fringe shift between image A and image B.

- *Assume an ether wind with equal physical lengths of the arms.*
- *Slanted rectangular bar is the half-silvered mirror.*
- *(Distance*) = distance of the light through the ether.*
- *Top A = 45 degrees relative to the ether wind. The two waves (vertical and horizontal) are in phase at the half-silvered splitting mirror with equal (distances*) in both arms.*
- *Bottom B = 0 or 90 degrees relative to the ether wind. The vertical wave loses a 0.25 wavelength and the horizontal wave gains 0.25 wavelength Therefore, at the half-silvered mirror, the two waves are still in phase even though the (distances*) in the two arms have changed.*
- *Again, relative to 45 degrees vs (0 degrees or 90 degrees), there is anti-symmetry (gain vs. loss) of the number of wavelengths with respect to the two arms. Nonetheless, for simplicity of explanation, only one symmetry is shown in this figure.*
- *The opposing waves, as shown above, are a function of the two light waves traveling to their respective peripheral mirrors and then both reflected back to the half-silvered mirror where the interference pattern then forms. However, with respect to this figure, only the reflective returning segments are shown.*

Proposed Original Correct Interpretation—Defined as the Hypothesis—Figure L.3

Figure L.3, as illustrated above, is the proposed correct hypothesis of the function of the MMX. Note that the assumptions posited are only assumed to be true; therefore, the physics described below is only presumed to be correct. In reality, the two streams of light waves, after being reflected from the peripheral full mirrors, are then physically traveling towards one another in opposition at a right angle. Their wavefronts initially intersect, moreover, interact, at the half-silvered mirror to form the interference pattern. Then, from the half-silvered mirror to the detector, they are fixed physically parallel relative to one another, even during rotation.

Now assume there is rotation of the MXX. If the two light waves are traveling in opposition (Figure L.3) and if one wave progressively gains (x) number of wavelengths (distance*), whereas the other wave →symmetrically← progressively loses an equal number of wavelengths (distance*), then at the true location of the interacting wavefronts (half-silvered mirror), there is no change in their interface. For the same reason, during rotation, there is no fringe shift (dimming), since this anti-symmetrical compensatory function prevents it. As a result, the configuration of the two interacting wavefronts at the location of the half-silvered mirror then remains unchanged. During rotation, the (distances*) change, but the interface of the two opposing waves does not. So, if the interface does not change, then neither does the interference pattern; therefore, there is no fringe shift. Additionally, from the half-silvered mirror to the detector or observer, the two waves travel physically parallel in the same direction, moreover, are fixed relative to one another, because at that time, both waves travel through the same ether (distance*). Therefore overall, relative to the detector (observer), during rotation, no fringe shift is observed.

In the real world, the physical lengths of the arms of the MMX are not absolutely equal relative to a single wavelength of light. So, in truth, at 45 degrees, an interference pattern forms, but only as a function of the unequal physical length of the arms. Then, during rotation, the anti-symmetrical counteracting process just described prevents a fringe shift.

To recap, the interference pattern is formed where the two returning opposing wavefronts first intersect, which is at the location of the half-silvered mirror. These right-angled intersecting waves are traveling in physical opposition not parallel (time in the MMX equations). So, during rotation (top to bottom), one light wave gains 0.25-wavelength (distance*) while the other wave loses 0.25-wavelength (distance*). Therefore, there is no change in the interface, so no interference pattern or fringe shift. See Figure L.3.

Once again, for the novice, Figure L.4, as well as figures L.5, L.6, and L.7 below, demonstrate, in the presence of an ether wind, that during the rotation of the MMX, due to the opposing anti-symmetrical counteracting function just described, where a gain of the number of wavelengths (distance*) in one arm is associated with an equal loss of number of wavelengths (distance*) in the other arm, no fringe shift occurs. Observe, at 45 degrees, the (distances*) within both arms are the same, assuming equal physical lengths of the two arms. This explains position A in the previous figures. But, remember, in the real world, the physical lengths of the arms are unequal when compared to a single wavelength of light. As a result, in truth, at this position (45 degrees), the (distances*) are unequal, although only as a function of the different physical lengths of the arms. The underlying rationale for why the author chose to assume equal physical length of the arms is for simplicity of explanation.

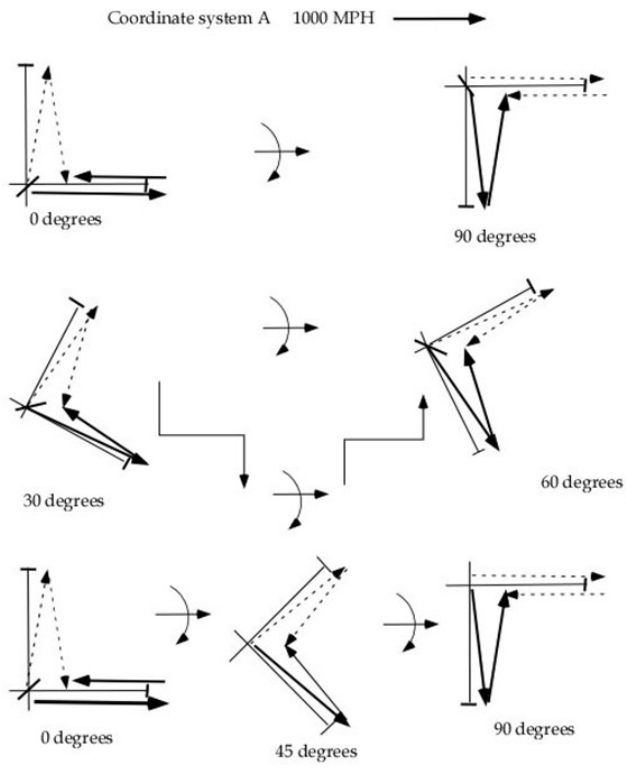


Figure L.4 Stable Interference Pattern Regardless of Ether Wind

Assume an ether wind 1,000 mph from left to right.

Presume equal physical length of the arms. So, at 45 degrees, the (distances) within both arms are then equal.* ***Observe during rotation of 0 to 90 degrees****.*

- *The dotted (distance*) exchanges places with the solid (distance*).*
- *Or the total number of wavelengths within the dotted arm exchanges places with the total number of wavelengths within the solid arm.*
- *Or the gain in the number of wavelengths within the dotted arm is symmetrical with the loss in the number of wavelengths within the solid arm.*

The opposing anti-symmetry function of the number of wavelengths then produces, during rotation, at the location of the half-silvered mirror, a stable interference pattern, regardless of whether or not there is an ether wind.

Left Right
Hollow Arrows = Ether Wind

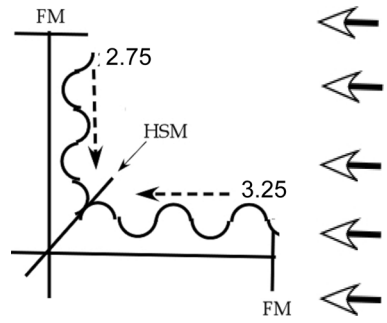


Figure L.5 0 Degrees Relative to the Ether Wind

N-S E-W
MMX is rotating clockwise.

- *The (distance*) with respect to the to-and-fro arm is greater than the crosswind arm.*
- *At 0 degrees the two light beams at the interface (half-silvered mirror) are in phase.* ***At 0 degrees, assuming an ether wind and presuming equal physical lengths of the arms, then the*** *wavefronts* ***at the half-silvered mirror are always in phase, moreover, in all orientations. See discussion after Figure L.7.***
- *The opposing waves shown are a function of the two light waves traveling to their respective peripheral mirrors and then both reflected back to the half-silvered mirror where the interference pattern then forms. However, with respect to the above figure, only the reflective returning segments are shown.*

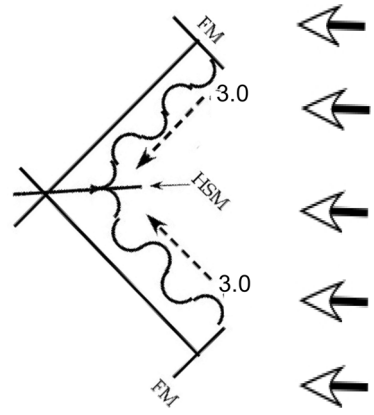


Figure L.6 45 Degrees Relative to the Ether Wind

The (distances) within each arm are now equal to each other. Nevertheless, the two light beams at the interface, (half-silvered mirror) are still in-phase. This is a function of a gain of a quarter of a wavelength in one arm and a loss of a quarter of a wavelength in the other arm. There is no fringe shift.*

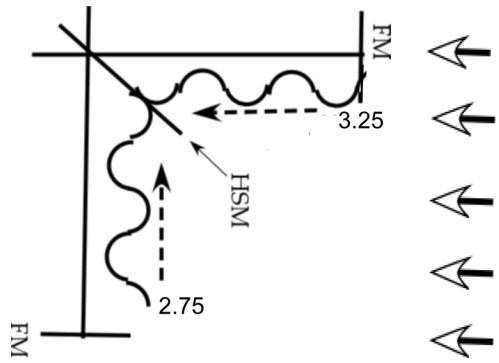


Figure L.7 90 Degrees Relative to the Ether Wind

The (distance) with respect to the to-and-fro arm is greater than the crosswind arm. But now when compared to 0 degrees, the two arms have exchanged places. The two light beams at the interface (half-silvered mirror) are still in-phase. Again, this is a function of a gain of a quarter of a wavelength in one arm and a loss of a quarter of a wavelength in the other arm.*

Therefore, even though, as a function of rotation, the (distances) change, the interface does not. And, if the interface does not change, then there is no interference pattern. For that reason, there is no fringe shift during rotation. Even in the presence of an ether wind, the MMX is silent as to whether or not it exists.*

Observe in Figure L.6, one can readily visualize at 45 degrees that the (distances*) with respect to both arms are identical, assuming equal physical lengths of the arms. Therefore, in this case at the location of the half-silvered mirror, the two light waves are in-phase, so no interference pattern forms (no dimming).

However, it is somewhat more difficult to envision at 0 and 90 degrees (figures L.5 and L.7) how, during rotation, counteracting anti-symmetry of opposing wavefronts in the two arms at the location of the half-silvered mirrors, prevents any change in those in-phase opposing wavefronts, even though the (distances*) have changed. Again, there is no dimming (fringe shift) even during rotation.

What all this indicates is that if the physical lengths of the two arms are absolutely equal, there is no interference pattern independent of rotation (no dimming). The interference pattern is only/purely a function of unequal physical length of the two arms (when present), relative to the distance of a single wave of light (wavelength) that is used—essentially a nonapparent Kennedy-Thorndike interferometer.

So then, presuming an unequal physical-length arm scenario at 45 degrees, as well as during rotation, and at the location of half-silvered mirror, there is, in this second scenario, no change in the now-observed interference pattern because of the anti-counteracting function as already described. What this means is the interference pattern is only a function of the unequal length of the physical arms relative to a single wavelength of light used, more importantly, not related to the ether wind.

In conclusion, all that depicted above is based on the assumption of counteracting opposing **anti-symmetrical** changes in wavefronts (distances*) from the frame of the half-silvered mirror.

Summary

The classic interpretation of the MMX perceives the experiment from the reference frame of the detector (observer) as a function of the "amount of time" it takes for light to travel through the ether, relative to each arm. This interval of time is then mathematically correlated to the (distances*), involving two **parallel** light beams, traveling in both arms in the same direction. In fact, they are not traveling parallel their entire (distances*), but mathematically expressed as a function of time with respect to the MMX equations, they are.

The incorrect interpretation is related to the following.

1. Relative to each arm, "time" is a function of (distance*) (true). However, the (distances*) could be traveling mathematically (time) parallel (false) or in physical opposition (true).

2. The origin of the interference pattern is located at the detector/observer (false).

3. This is the location where the two interacting waves travel physically parallel with respect to each other (true).

4. The origin of the interference pattern forms at the half-silvered mirror (true). This is the location where the two waves travel in physical opposition with respect to each other (true).

5. During rotation, the two parallel waves (mathematical time), shift back and forth relative to one another, therefore, producing a fringe shift at the location of the detector (false).

6. During rotation, at the location of the half-silvered mirror, the interface of the opposing light waves remains fixed as a function of counteracting anti-symmetry (true).

In contrast, the proposed correct interpretation (hypothesis) perceives the MMX outcome from the reference frame of the half-silvered mirror. Therefore, relative to each arm, during rotation, as a function of two **opposing**, moreover, anti-symmetrical counteracting wavefronts the (distances*) change; however, the interface remains constant. Consequently, there is no fringe shift even in the presence of an ether wind.

For all these reasons, the MMX is silent as to whether or not the ether exists. The MMX is incapable of detecting the ether wind. Voila! There you have it.

From another perspective:

1. First assume equal physical length of the two arms, additionally an ether wind. Therefore, during rotation, the anti-symmetrical counteracting function just described, from the frame of the half-silvered mirror, prevents an interference pattern. So even during rotation, the two separate interacting waves remain in phase. Accordingly, during rotation, there is also no interference pattern, moreover, no fringe shift.

2. If the two light waves are out of phase, in this case, only as a function of unequal physical length of the arms, there is now an interference pattern, but during rotation no fringe shift. With reference to this second scenario, the interference pattern is based exclusively upon the unequal physical length of the arms. Additionally, during rotation, the counteracting function just described from the frame of the half-silvered mirror, prevents any change in that specific interference pattern. So even during rotation there is no fringe shift; the interference pattern remains stable.

3. Assuming there is no ether, once again as a function of rotation, there is no fringe.

4. Given the fact that it is almost impossible to construct an MMX such that the two arms are perfectly equal relative to a single wavelength of light, as such, then all MMX are, in fact, non-apparent Kennedy-Thorndike experiments which is actually the second scenario as described above (2).

II. A Second Alternative Postulate Theorized in Chapter 3 (most likely the correct concept)

The author is absolutely convinced the interference pattern of the MXX is formed at the location of the half-silvered mirror and not from the frame of the telescope. It is observed at the telescope but not formed there. Nevertheless, the author does not possess the mathematical skill/knowledge to prove whether or not counteracting changes of the returning opposing wavefronts (distances*) from the frame of the half-silvered mirror are **anti-symmetrical** or alternatively **anti-asymmetrical**. Consequently, this novel theory, as presented, is unproven.

In other words, regarding this alternative original MMX *hypothesis*, all that described in Chapter 3 is totally dependent on the assumption of counteracting opposing **anti-symmetrical** changes of wavelength (distances*) from the frame of the half-silvered mirror; therefore, during rotation, there is no interference pattern and no fringe shift.

On the other hand, what occurs if the counteracting opposing wavelength changes (distances*) from the frame, the half-silvered mirror is **anti-asymmetric** instead of anti-symmetric? In this instance, during rotation, there would now be a fringe shift. However, it would be of a lesser magnitude compared to the parallel wave *theory* (classic interpretation/explanation).

For further clarification see the comparisons below and again →assume equal physical length of the arms, as well as an ether wind←.

A. Incorrect classic **parallel** wave *theory* **from the frame of the observer/telescope**

At 45 degrees relative to the ether wind, the two waves are in phase. During rotation to 0 or 90 degrees, one arm progressively gains wavelengths (distance*) and the other arm progressively loses wavelengths (distance*). The supposed fringe shift would be a function of the →**sum**← of these two functions.

B. Proposed correct original **opposing** counteracting **anti-symmetrical** wave *hypothesis* of Chapter 3 from the **frame of the half-silvered mirror**.

At 45 degrees relative to the ether wind, the two waves are in phase. During rotation to 0 or 90 degrees, one arm progressively gains x wavelengths (distance*) and the other arm **anti-symmetrically** progressively loses x wavelengths (distance*). In this second instance, there is no interference pattern or fringe shift.

C. Proposed alternative correct **opposing** counteracting **anti-asymmetrical** wave *postulate* from the **frame of the half-silvered mirror**.

At 45 degrees relative to the ether wind, the two waves are in phase. During rotation to 0 or 90 degrees, one arm progressively gains wavelengths (distance*) and the other arm **anti-asymmetrically** progressively loses wavelengths (distance*). In this third instance, the fringe shift produced would be related to the →**difference**← between these two functions.

1. Classic/standard theory

Incorrect **parallel** wave theory from the frame of the observer/telescope = fringe shift during rotation.

2. Original proposed correct alternative hypothesis of Chapter 3

There is assumed to be counteracting **anti-symmetrical** opposing waves from the frame of half silvered mirror = no fringe shift during rotation.

3. Proposed second correct alternative postulate

There is assumed to be counteracting **anti-asymmetrical** opposing waves from the frame of the half-silvered mirror = fringe shift during rotation but < the parallel wave *theory*.

What this establishes is that, during rotation, the predicted fringe shift regarding the incorrect parallel wave *theory* would be greater compared to the correct **anti-asymmetrical** *postulate*. Consequently, supposedly the **parallel** wave theory would be more sensitive compared to the **anti-asymmetrical** *postulate*.

Bear in mind, presuming the incorrect parallel wave *theory* (mathematics) is utilized to calculate the theoretical expected fringe shift, but the proposed **anti-asymmetrical** *postulate* is actually observed, then that conflicting result might not be considered as scientifically significant, thus discarded/ignored, accordingly, a presumed false null outcome.

The quandary then is this: without the use of mathematics, which theory/hypothesis/postulate most likely represents reality?

In the author's opinion the interference pattern first forms at the half-silvered mirror from two counteracting opposing wavefronts so the classic *theory* can be discarded. This leaves the **anti-symmetrical** *hypothesis* and the **anti-asymmetrical** *postulate* as possibilities. To resolve this dichotomy, the author presents the following five figures with explanations. Yet again, assume equal physical lengths of arms.

First Scenario

Left Right

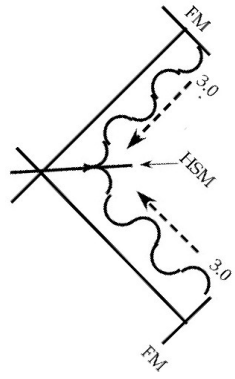


Figure L.8 45 Degrees with no Ether Wind

N-S E-W
A. 45 degrees with no ether wind

Left Right

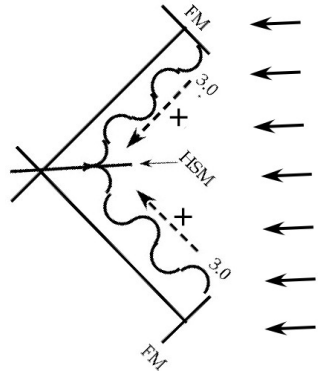


Figure L.9 45 Degrees Relative to the Ether Wind

N-S E-W
B. 45 degrees relative to the ether wind

Left Right

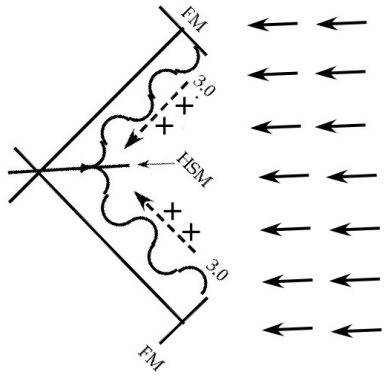


Figure L.10 45 Degrees Relative to a Greater Ether Wind

N-S E-W
C. 45 degrees relative to a greater ether wind

Please review figures L.8, L.9, and L.10. Notice at 45 degrees without an ether wind, the (distances*) within the two arms are equal (see Figure L.8).

Additionally, with an ether wind, regardless of its velocity, whether slower (Figure L.9) or faster (Figure L.10) the (distances*) are still equal in each instance. In all three cases, regarding the opposing wavefronts at the location of the half-silvered mirror, the two waves are in phase; therefore, there is no interference pattern.

Second Scenario

Left Right

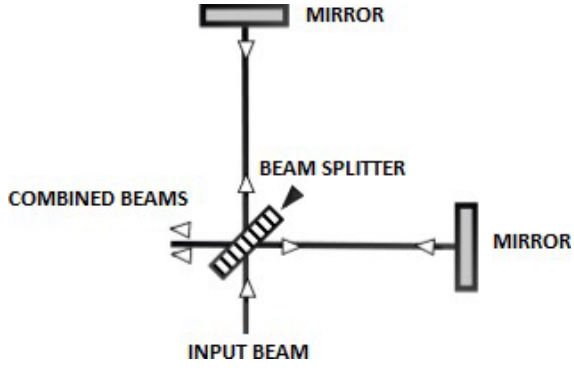


Figure L.11 0 Degrees with no Ether Wind [Fair Use]

Left Right

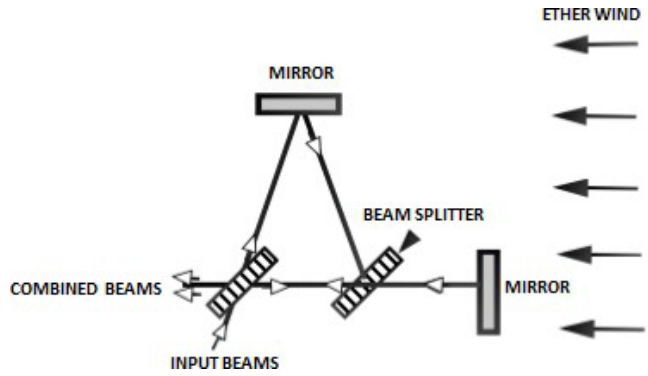


Figure L.12 0 Degrees with an Ether Wind [Fair Use]

Please review figures L.11 and L.12. Notice that at 0 degrees without an ether wind (Figure L.11), the (distances*) within both arms are equal. And so regarding the returning interacting opposing wavefronts from the frame of the half-silvered mirror, the two waves are in phase, consequently no interference pattern.

Alternately, with an ether wind (Figure L.12), the (distance*) within the to-and-fro arm is greater than the crosswind arm. Consequently, regarding the returning interacting opposing wavefronts, from the frame of the half-silvered mirror. the two waves are now out of phase; therefore, an interference pattern occurs.

Please pay close attention for here is a key concept. Scenarios 1 and 2 above are incompatible with one another. And here is the reasoning.

Relevant to Scenario 1, moreover, assuming an ether wind, at 45 degrees, the (distance*) within both arms are equal. Therefore, regarding the returning interacting waves and given the assumption of counteracting **anti-symmetrical** opposing wavefronts, then during rotation, from the frame of the half-silvered mirror, the two waves always remain in phase, even at 0 degrees (see figures L.5, L.6, and L.7. But notice, this outcome is incompatible with Scenario 2 →with an ether wind←, whereby there is an interference pattern at 0 degrees (out of phase—see figures L.11 and L.12).

Alternatively, the two different scenarios/angles (45 vs 0 degrees) could be compatible, assuming counteracting anti-asymmetrical opposing wavefronts **from the frame of the half-silvered mirror.**

For this reason, it is the author's opinion that the *postulate* of counteracting **anti-asymmetrical** opposing wavefronts is more likely than the **anti-symmetrical** *hypothesis*. Nevertheless, this belief necessitates a rigorous mathematical proof for validation.

Again, for reinforcement and review:

1. Incorrect Classic Parallel Wave *Theory* **from the frame of The Observer/ Telescope**.

At 45 degrees relative to the ether wind, the two waves are in phase. During rotation to 0 or 90 degrees, one arm progressively gains wavelengths (distance*), and the other arm progressively loses wavelengths (distance*). The resulting supposed fringe shift would be a function of the →**sum**← of these two processes.

2. Proposed Correct Original Opposing Counteracting **Anti-symmetrical** Wave *Hypothesis* of Chapter 3 from The **Frame of Half-silvered Mirror**.

At 45 degrees relative to the ether wind, the two waves are in phase. During rotation to 0 or 90 degrees, one arm progressively gains x wavelengths (distance*), and the other arm **symmetrically** progressively loses x wavelengths (distance*). In this second instance, there is no interference pattern or fringe shift.

3. Proposed Correct Alternative Opposing Counteracting **Anti-asymmetrical** Wave *Postulate*, from the **Frame of the Half-silvered Mirror**.

At 45 degrees relative to the ether wind, the two waves are in phase. During rotation to 0 or 90 degrees, one arm progressively gains wavelengths (distance*), and the other arm **anti-asymmetrically** progressively loses wavelengths (distance*). In this third case, the fringe shift would be related to the **→difference←** between these two functions. Actually, this is more complicated than the meaning of the word difference; see below.

This is a very intricate concept to visualize as now presented. Fundamentally, the fringe shift would be less than the classic theory. At 0 degrees, the to-and-fro arm (distance*) is greater than the crosswind arm (distance*), but at 45 degrees, they are both equal. In order for this to occur, the crosswind arm must gain fewer wavelengths compared to the loss of the number of wavelengths in the to-and-fro arm—up to 45 degrees. Then, from 45 degrees to 90 degrees the new to-and-fro arm must gain more wavelengths than the loss of the number of wavelengths in the new crosswind arm.

In the author's opinion, the classic *parallel* theory is incorrect; moreover, only the second and third scenarios are potentially correct, either one or the other. Furthermore, they can be experimentally differentiated as spelled out in the following section.

3. Potential Experimental Tests Relevant to the Different Theories

The author proposes the following hypothetical experiments as potential proof of the existence of the ether vis-á-vis the **anti-symmetrical** *hypothesis* versus the **anti-asymmetrical** *postulate*. One more time, assume equal physical length of the arms.

First Proposed Experiment

So, assuming the relative ether wind changes velocity between two different reference frames (defined as coordinate systems B and C in Appendix D), a fringe shift occurs as a function of moving from one frame into another one. Examples of two different frames or coordinate systems using the MMX relative to the ECF/EGF would be:

Example 1

A. At the equator, sited on the rotating surface of the Earth, with one arm oriented fixed south/north (S/N) and the other arm fixed west/east (W/E), thus 1,000 mph with respect to the ECF/EGF—a relative ether wind of 1,000 mph.

B. On an airplane, traveling 600 mph, west to east, at the latitude of the equator with one arm oriented fixed S/N and the other arm fixed W/E, therefore, equal to 1,600 mph with respect to the ECF/EGF—a relative ether wind of 1,600 mph.

The two coordinate systems possess different velocities relative to the ECF/EGF, as such, different relative ether winds.

Therefore, if one carries out an MMX "sited" on the Earth's rotating surface, fixed in the S/N-W/E directions (A), and subsequently at the same latitude, in the same mode, on an eastward bound airplane traveling 600 mph (B), then between these two frames, a different interference pattern emerges.

Example 2

Additionally, if one performs the experiment, S/N-W/E, first at the equator, at rest with the Earth's rotating surface, 1,000 mph relative to the ether (ECF), and second at the South Pole, 0 mph relative to the (ECF), there will then again be a disparity in the shape of the interference patterns between these two frames.

The reasoning behind the fringe shift is as follows. As the MMX increases its velocity relative to the ECF, moreover, as in Example 1 fixed and oriented S/N-W/E, there is a gain of (distances*) in both the to-and-fro arm (W/E) as well as the crosswind arm (S/N). But it is proportionally greater in the to-and-fro arm. Consequently, there is a fringe shift as a function of an increasing velocity relative to the ECF using the postulate not the hypothesis.

1. The **anti-asymmetrical** *postulate* would produce a fringe shift between the two different coordinate systems.

2. The **anti-symmetrical** *hypothesis* would not produce a fringe shift between two different coordinate systems.

Second Proposed Experiment

Regarding this experiment, relative to the ECF/EGF, one arm is fixed vertically in the upright position perpendicular to Earth and the other arm horizontally, parallel to the Earth's surface rotating, between the cross-wind direction (S-N, N-S) and the to-and-fro wind direction (W-E, E-W).

Consequently, vis-á-vis this experiment, the vertical arm (distance*) is stationary and constant. On the other hand, regarding the horizontal arm, as a direct function of rotation between (S-N, N-S) versus (W-E, E-W), the (distance*) then changes.

This is not the classical revolving motion of the MMX, which as originally performed is parallel to the Earth's surface (both arms). Referring to this new experiment, the rotational motion is along the axis of the fixed upright vertical arm, whereas the horizontal arm is moving parallel to the surface of the Earth (E-W, N-S). So, assuming the new theory is valid (PFGRT), then regarding this alternative mode of the MMX, there should be a fringe shift, as a function of this form of rotation, again proof of The Ether. Take note, in this scenario, there is no counteracting **anti-symmetry or anti-asymmetry** of the wavefronts of the two arms, from the frame of the half-silvered mirror.

As an adjunct, an MMX located inside a satellite in a circular orbit with one arm oriented radial to the Earth's center, whereas the other arm alternating between parallel and transverse relative to its orbital motion, should also produce a greater fringe shift as a function of this form of rotation—again proof of the ether.

1. The **anti-asymmetrical** *postulate* would produce a fringe shift during rotation.
2. The **anti-symmetrical** *hypothesis* would also produce a fringe shift during rotation, nevertheless, a different fringe shift.

Third proposed experiment

One arm is oriented (fixed) parallel to the surface of the Earth and the other arm rotates between parallel and upright (perpendicular to parallel relative to the inflow of the ether).

1. The **anti-asymmetrical** *postulate* would produce a fringe shift during rotation.
2. The **anti-symmetrical** *hypothesis* would also produce a fringe shift during rotation, nevertheless, a slightly different fringe shift.

This experiment may well be more accurate within an orbiting satellite. This would eliminate compression changes from gravity regarding the revolving upright arm.

These imaginary tests, if carried out as actual experiments, and if confirmed, would be evidence of a relative ether wind. So, in fact, the MMX can detect the ether wind but not in context as originally performed. The author cannot emphasize this enough. These alternate experiments of the MMX, as described above, and if verified, would then invalidate relativity, furthermore, attest to the existence of the ether.

4. Conclusion

Given all the above, it is the author's opinion that the classic/standard parallel wave *theory* explanation of the MMX is incorrect because the interference pattern does not occur at the telescope/observer but rather at the half-silvered mirror relevant to two counteracting opposing waves fronts.

→Additionally, regarding these two opposing fronts, the **anti-asymmetrical** *postulate* more likely represents the real function of the MMX compared to the **anti-symmetrical** *hypothesis*. Nevertheless, this assumption requires a rigorous mathematical/experimental proof←.

APPENDIX M

OVER-UNITY

Appendix M is divided into three sections:

M.1. General Introduction.

M.2. A Simplified Model of an Over-Unity Wheel.

M.3. The Suppression of Pyridine Shift Scientific Theories and Breakthrough Inventions.

M.1 General Introduction

This appendix provides additional information regarding the subject of over-unity. This term presumes that the output of energy/work is greater than the input of energy/work.

The following is a definition of over-unity obtained online at:

https://en.wiktionary.org/wiki/over-unity

Over + unity = referring to the fact that an over-unity device should produce more energy than it receives as input. The term was coined to avoid patent rules that prevent impossible technologies such as perpetual motion machines being patented.

Many diverse individuals/scientists/inventors have avowed over-unity. Nevertheless, given the fact that their claims violate the supposed irrefutable law of the conservation of energy, their assertions are rejected/ignored/ridiculed.

Vis-á-vis the literature/news, there are numerous proclamations of over-unity, but the vast majority are very intricate and complicated, consequently, extremely perplexing to appreciate, if even real. Nevertheless, this appendix posits the concept of over-unity as delineated by the examples provided below.

M.2 A Simplified Model of an Over-Unity Wheel

The author now presents the simplest over-unity designs, the least complicated for the average novice to grasp and visualize as revealed in the following four websites. Please pay close attention, especially to the first website listed.

https://www.youtube.com/watch?v=rbCnzsFjvQU
https://www.youtube.com/watch?v=88Z2x1MEex8
https://www.youtube.com/watch?v=rsBplmMDcRQ
https://www.youtube.com/watch?v=DsvP1CaiVjI

The author has decided to make this specific section redundant, not for the sake of the physicist, for he/she will readily understand the concepts presented, but rather to underscore their significance. The author has composed it in this manner for the benefit of the apprentice.

For that reason, the same concepts are presented multiple times and from different perspectives. Hopefully, for the novice, this repetitive methodology will aid in his/her ability to grasp the ideas presented.

Now here is the explanation for the simplest design. See Figure M.1 below and the following description.

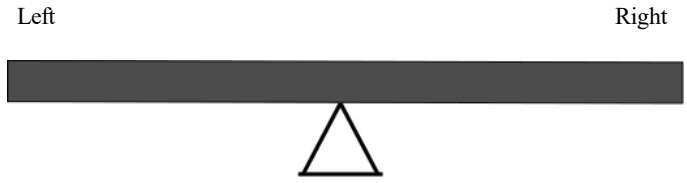


Figure M.1

A uniform flat rectangular board is balanced at its center utilizing a triangular wedge as illustrated, the latter of which represents the fulcrum. There is an equal amount of mass located on either side of the fulcrum, consequently the board is balanced.

See Figure M.2 below.

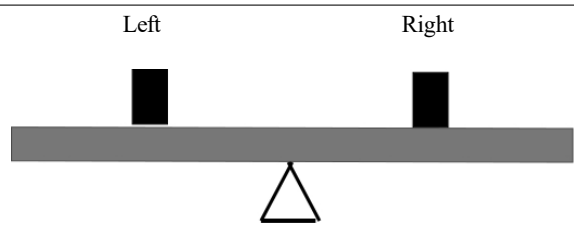


Figure M.2

Then on both sides of the fulcrum, identical/equal masses are placed exactly halfway towards the end of the board on each side. Observe that the entire structure still remains balanced, what's more, overall again, there is equal amount of mass positioned on either side of the fulcrum.

See Figure M.3 below.

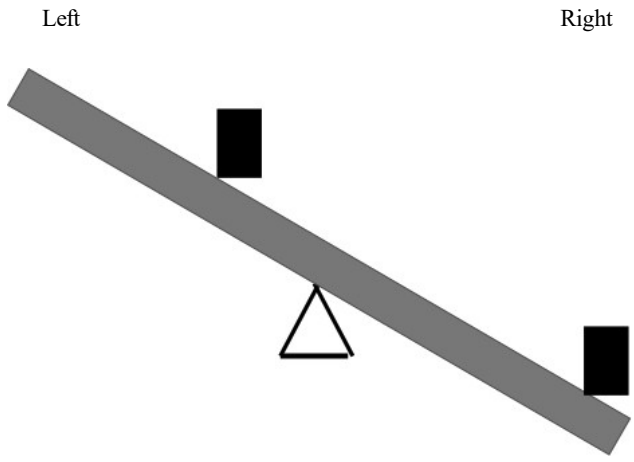


Figure M.3

Next, move the right mass to the end of the board on its side, while leaving the left mass as is. Observe that the board tilts down on the right. (There is now more torque on the right than the left, so the structure slants down on the right.) Discern that there is still equal **overall** mass on either side of the fulcrum; even so, the board is now unbalanced.

→What all this indicates is the center of the gravitational force and the center of balance do not always coincide←.

See definition below.

The three figures depicted above, with their descriptions, are confusing with respect to the classical/ standard conception of the center of mass/gravity as explained by the following three quotes and subsequent discussions.

1. In physics, the center of mass of a distribution of mass in space is the unique point where the weighted relative position of the distributed mass sums to zero. This is the point to which a force may be applied to cause a linear acceleration without an angular acceleration. Calculations in mechanics are often simplified when formulated with respect to the center of mass. It is a hypothetical point where entire mass of an object may be assumed to be concentrated to visualize its motion. In other words, the center of mass is the particle equivalent of a given object for application of Newton's laws of motion. In the case of a single rigid body, the center of mass is fixed in relation to the body, and if the →body has uniform density, it will be located at the center←. [Center of Mass - Wikipedia]

2. Mass is defined as "the quantity of matter composing a body." In every object, there is a unique point called "center of mass (CM)" around which the object's →mass is equally distributed in all directions←. ***In other words, mass is balanced at the CM in all directions.***

http://oregonstate.edu/instruct/exss323/CM Lab/Center%20of%20Mass.htm

→ Discern the center of mass and the center of gravity are not the same thing. With respect to center of mass, mass is equally distributed on either side of the fulcrum whereas with reference to the center of gravity the mass is not necessarily equally distributed on either side of the fulcrum←.

3. If we push on a rigid object at its center of mass, then the object will always move as if it is a point mass. It will not rotate about any axis, regardless of its actual shape. If the object is subjected to an unbalanced force at some other point, then it will begin rotating about the center of mass.

https://www.khanacademy.org/science/physics/linear-momentum/center-of-mass/a/what-is-center-of-mass

In summary, assuming the new inflowing ether premise, as stated in this appendix, is factual, then from the frame of the inflowing ether (gravity), which is the example as given above (figures M.1, M.2, and M.3), the center of balance and the center of gravitational force are not in all cases the same.

For reinforcement, again please review the websites as previously presented on the topic of over-unity. Keep in mind again the center of mass of an object is not the same thing as the center of a gravitational force exerted on an object.

https://www.youtube.com/watch?v=rbCnzsFjvQU
https://www.youtube.com/watch?v=88Z2x1MEex8
https://www.youtube.com/watch?v=rsBplmMDcRQ
https://www.youtube.com/watch?v=DsvP1CaiVjI

Observe that (first and last) in each instance, the wheel's pivot is located at the exact center of its **overall** mass/gravitational force (not the definition of the center of mass).

Additionally, on one side of the wheel (right), the mobile/movable peripheral masses shift/fall towards the outer side of the wheel as compared to the opposing side (left). This is a function of gravity or by the terminology of this book, the accelerating factor of the inflow of s pace/ether. Accordingly, there is then more torque on that side (right) vs. the left. The overall wheel is now unbalanced. Yet the center of gravitational force is still located at the pivot.

The persistent asymmetrical torques, analogous to figures M .1, M .2, and M .3, cause the w heel to continually rotate in the direction of the side with the greater torque (right), moreover, without the classic input of energy/work. But in truth, the apparent over-unity is a product the continuous accelerating factor of the inflowing ether as hypothesized in this publication titled ***The Ether***.

Rotational physics (torque) is distinct from translational physics (Newton $F = ma$).

Force

In physics, a force is any interaction that, when unopposed, will change the motion of an object. (1) A force can cause an object with mass to change its velocity (which includes to begin moving from a state of rest), i.e., to accelerate. Force can also be described intuitively as a push or a pull. A force has both magnitude and direction, making it a vector quantity. It is measured in the SI unit of newtons and represented by the symbol F.

The original form of Newton's second law states that the net force acting upon an object is equal to the rate at which its momentum changes with time. If the mass of the object is constant, this law implies that the acceleration of an object is directly proportional to the net force acting on the object, is in the direction of the net force, and is inversely proportional to the mass of the object. [*https://engineeringunits.com/fma-calculator/*]

This definition refers to only linear or translational motion.

Torque

Torque is a measure of how much a force, acting on an object, causes that object to rotate. The object rotates about an axis, which we will call the pivot point In other words, torque is the cross product between the distance vector (the distance from the pivot point to the point where force is applied) and the force vector, "a" being the angle between ***r*** *and* ***F****.*

*Imagine pushing a door to open it. The force of your push (**F**) causes the door to rotate about its hinges (the pivot point, O). How hard you need to push depends on the distance you are from the hinges (r) (and several other things, but let's ignore them now). The closer you are to the hinges (i.e., the smaller r is), the harder it is to push. This is what happens when you try to push open a door on the wrong side. The torque you created on the door is smaller than it would have been had you pushed the correct side (away from its hinges).*

https://www.physics.uoguelph.ca/tutorials/torque/Q.torque.intro.html

Observe, this definition refers to only rotational motion.

Once again for emphasis, please refer to Figure M.4 below (a repeat of Figure M.3).

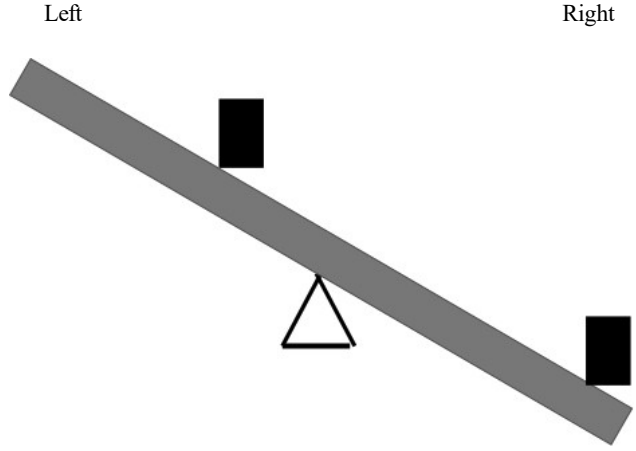


Figure M.4

1. Descriptions are simplified for the novice.

2. As in Figure M.3/M.4, the center of the overall gravitational force is located at the pivot.

3. The torque on the right is a function of the gravitational force exerted on the entire mass of the right half of the board plus the force of gravity applied to the peripheral mass (the later located at the end of the board's right side) times the overall sum of all the distances to the pivot. This function produces a given amount of torque at the pivot. (This is a simplified description). Now assume the value of this torque is defined as A.

4. The torque on the left is a function of the gravitational force exerted on the entire mass of the left side of the board plus the force of gravity applied to the center mass, this time located midway relative to the board's left side, times the overall sum of all of the distances to the pivot. This function creates a torque at the pivot (simplified description). Presume there is a given value of this torque but this time defined as B.

5. Since the mass on the left is located halfway relative to the end of the board but on the right at the very end of its side, torque A is then greater than torque B.

6. For that reason, overall, the board with its masses tilts down to the right. (The right half tilts down and the left side slants up.)

7. Again, please review the definitions of force and torque as just presented.

8. The force times the **overall mass** is equal on each side of the fulcrum (linear physics = Newton), but the force times distances (torque) is greater on the right (rotational physics).

9. Rotational physics is what actually occurs.

10. Accordingly, one cannot use Newtonian physics (linear physics) to describe/understand/explain this example, moreover, derived devices/inventions (see below).

Please refer to figures M.5 and M.6.

Figures M.5 and M.6 are a picture and a schematic of "Big Perpetuum Mobile," which refers the website cited below. This is the least complicated design to explain/visualize. Please visit and review that site, before reading the following explanation.

https://www.youtube.com/watch?v=rbCnzsFjvQU

YouTube "Big Perpetuum Mobile"

Figure M.5 [Fair Use]

Left Right

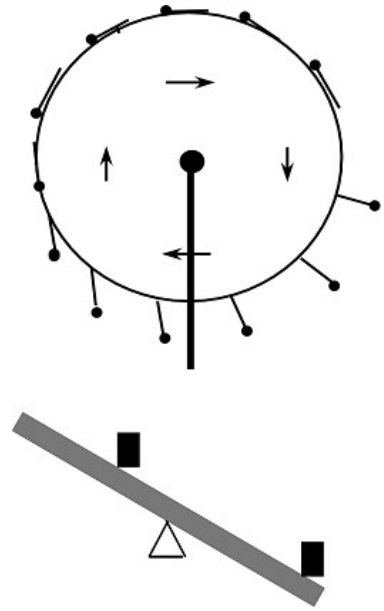


Figure M.6

Upper M.6 is a schematic of Figure M.5. Arrows represent the direction of rotation of the wheel.

Lower M.6 is somewhat similar to upper M.6 in that the torque is greater on the right compared to the left.

Explanation of the ”Big Perpetuum Mobile” wheel:

1. The center of the force from gravity of the entire structure/wheel is located at the pivot.
2. On the right, as the movable bar flips out/falls peripherally from gravity, there is then more torque produced compared to the left side whereby the bar is located inwards and more towards the pivot.
3. The asymmetrical torques generated then induces the wheel to rotate clockwise to the right.
4. In turn, this causes the next upper adjacent movable bar to come into position, so it too can flip out/fall peripherally from gravity/inflow of space. This ongoing function again effects a net asymmetric torque producing rotation to the right.
5. In succession, the same process repeats itself, again and again, and so on and so forth infinitum.
6. The explanation given above is fairly straightforward, but in fact, the true functionality of this machine is much more multifaceted as now conveyed.
7. This is because during the ‘”fall” (time of flight) of the bar on the right, the overall mass on the left side of the wheel is then greater compared to the right side. So during this ”time of flight frame,” the wheel rotational rate slows, assuming it already is rotating clockwise to begin with.
8. Additionally, as noted in the video, as the bar on the right ends its fall when it interacts with the wheel, this development adds angular momentum/velocity/rotation to the wheel rotating to the right (clockwise).
9. However, when the wheel’s rotational velocity to the right increases, the ”time interval of flight” of the ”falling” bar also increases. So, for that added interim (time), the mass on the left remains greater relative to the right side, thus slowing rotation.

10. Furthermore, as the wheel's rotation rate increases to the right (clockwise), there is less momentum added to the wheel whenever the falling bar interacts/stops relative to the wheel.

11. Discern that the above functions (7, 9, and 10) counteract the asymmetrical torques which produce the primary initial rotation to the right as illustrated in figures M.1, M.2, and M.3.

12. As a result, there is an equilibrium involving all the above functions/forces, which maintains a constant rate of rotation clockwise as depicted in the video.

13. Fundamentally, the primary driving force for rotation to the right (clockwise) is a function of the asymmetrical torques being greater on the right than the left. But as the rotation velocity increases, functions 7, 9, and 10, as described above, come into play until there is an equilibrium.

14. Again, the primary driving force for continuous rotation without apparent energy input is a function of the asymmetrical torques as depicted/theorized/posited vis-á-vis figures M.1, M.2, and M.3.

15. To all intents and purposes, this is a perpetual motion machine exhibiting over-unity.

16. The **overall mass** on each side of the fulcrum is the same and the force from gravity (inflow of space) is also identical on each side.

17. Essentially $F = ma$ on one side of the fulcrum is equal to $F = ma$ on the other side. In other words, there is no imbalance of linear Newtonian $F = ma$ because it is equal on both sides.

18. Therefore, given the assumptions of only linear Newtonian physics ($F = ma$), there is no underlying reason for it to rotate; nevertheless, it does.

19. Alternately, regarding rotational physics, the torque is greater on the right vs. the left, so in fact as shown, it rotates.

20. What all this indicates, as already stated above, is that Newtonian linear physics ($F = ma$) is distinct from rotational physics (torque).

21. For that reason, one cannot explain/understand this device by utilizing Newtonian physics but rather only with rotational physics.

22. So where does the over-unity force/energy originate from? It cannot be from gravitational potential energy, because after 360 degrees of rotation, the wheel is back to its starting point. This is the law of conservation of energy.

23. Once again, energy is drawn from the continuous accelerating factor of inflow of space/ether (gravitational field), to some extent, analogous to the production of energy as a function of water falling from a dam. **See Chapter 2**

The author has one more reflection. Numerous other experimenters have proclaimed over-unity inventions. Even so, given that they all contradict the law of conservation of energy, they are ridiculed, ignored, and perhaps, even suppressed. However, if the device described above eventually proves valid (Big Perpetuum Mobile), which the author believes is true, then the classic law of conservation of energy is in erratum. Presuming this is so, this opens a pathway for acceptance by the scientific community, moreover, even perhaps, for all of mankind of the potential for other over-unity inventions. Hopefully then, closed minds will then be open to new concepts, ideas, and developments, including other over-unity devices.

M.3 The Suppression of Paradigm Shift Scientific Theories and Breakthrough Inventions

The following topic is highly controversial. As such, the author hesitates to even write about it.

The subject matter is this:

Why are new scientific discoveries/inventions/ theories habitually suppressed and ridiculed, furthermore, their originators punished such as Copernicus (death) and Galileo (imprisonment)? In addition, Newton was reluctant to publish his paper titled *Philosophic Naturalis Principia Mathematica* but eventually did so, however, only with help/protection from some of the English nobility. By the same token, regarding present-day inventors/engineers (like Eric Laithwaite), they are time and again ignored, ridiculed, and even ostracized.

To understand why, one must recognize what is, in fact, true human nature. Accordingly, by necessity, this section involves politics and religion, very delicate subjects to deliberate, moreover. not the usual subject matter appropriate for scientific papers.

→However, before proceeding, the author acknowledges that human behavior/motivation is highly complex and multifactorial. Therefore, the following premise is just one aspect among many←.

Generally, regarding all human societies, there are the rulers and the others, the oligarchy and the general population. The real battle/conflict is always between central government control (oligarchy) versus individual liberty of the general population.

For instance, here is a list.

1. Communism
2. Capitalism
3. Socialism
4. Nazism
5. Caliphate
6. Kings
7. Emperors
8. Pharaohs
9. Dictators
10. Theocracy
11. Czars
12. Mercantilism
13. Religious rulers
14. Mullahs
15. Chiefs
16. Autocracy
17. Totalitarianism
18. Despotism
19. Fascism
20. Nobility

It is the author's opinion that all these terms have one thing in common: There is the ruler (oligarch) and those who support him/her.

And then, there is the general population, basically, the serfs/cattle/sheep whom they control in order to serve them.

The conflict then is always between the oligarchy and the general population. In the United States, our founding fathers knew this. This is why we have a constitution, including the separation of powers, as well as The Bill of Rights. In addition, without the implementation/enforcement of those documents, there would be no middle class; what is more, almost all power and wealth would be concentrated in the hands of the oligarchy.

Although not outwardly apparent, we in the U.S. still have a hidden oligarchy; this is called the deep state or shadow government.

Below is a definition of the deep state.

The deep state is an alleged secret network of especially nonelected government officials and sometimes private entities (as in the financial services and defense industries) operating extralegally to influence and enact government policy. The power of the deep state comes from experience, knowledge, relationships, insight, craft, special skills, traditions, and shared values. [*www.merriam-webster.com*]

Below is a definition of the shadow government.

The shadow government is a network that denotes "individuals and groups bound together by a common ideological worldview that takes precedence over norms of democratic governance." According to this ideology, the shadow government is the true executive power, subservient to the official elected government. [*www.aclj.org*]

Our deep state/shadow government includes bankers, industrialists, old royalty of Europe, economically very powerful individuals, such as the Rothschilds, Soros, Sousuers, Rockefellers, Bezos, and the Saudi royal family.

In fact, most of the wealth of our nation is in the hands of a select few (oligarchy). Even so, the liberty we still possess, unlike some other societies, has allowed our population/middle class to accumulate and retain significant power and wealth.

So, regardless of whether there is communism, capitalism, socialism, Nazism, or theocracy, the oligarchy always possess/accumulate the vast majority of wealth and the general population maintains/produces that wealth for them. It does not matter what the system, the rulers are always wealthy and, with that wealth, comes control over their populations.

Basically, the oligarchy controls and manipulates the general population for their own benefit, power, and wealth by different means. These mechanisms include.

1. Religion
2. Propaganda (mainstream news)
3. Shaping the narrative
4. Economics
5. Employment
6. Banking
7. Taxes
8. Surveillance
9. Assassination
10. Social media
11. Debt
12. Loans
13. Credit
14. Entertainment
15. Distraction
16. Laws
17. Weather control
18. Chemtrails
19. Energy
20. Peer pressure
21. Control of currency (e.g., Federal Reserve)
22. Psychology
23. Educational system
24. Food
25. Water
26. Language
27. Words
28. Environmental regulation
29. Health care
30. Retirement
31. Control of travel
32. Face recognition technology
33. Control of weapons
34. Screening for security
35. Military
36. Police
37. CIA, FBI, NSA
38. IRS
39. Slavery
40. The alpha male/female
41. Psychologically divide and control the population (divide and conquer)
42. The keeper of politically correct knowledge (supposed correct knowledge) like scientific theories (alpha male/alpha female/professors)

Now, sometimes the control is overt, such as with Hitler or Stalin. At other times, it is subtle/hidden as in the European Union. Pertaining to the European Union, the parliament is elected and can vote on new laws, but only the commissioners can propose that legislation. The commissioners are appointed—by whom?—the oligarchy. So, the population of the EU only thinks it is a democracy—not real.

So, in summary, whatever/whomever threatens the oligarchy's control mechanisms is then suppressed, ridiculed, ignored, imprisoned, and even at times, killed or assassinated.

"To find out who rules over you, simply determine who you are not allowed to criticize." (Voltaire)

Fundamentally, this is the main reason why new scientific discoveries and inventions are often suppressed and ridiculed, furthermore, their originators punished like Copernicus (death) and Galileo (imprisonment). **Principally, they threatened the oligarchy's power and control over their populations.**

What this all indicates is that if the concept/theories and potential inventions as hypothesized in this book are proven correct, this fact then endangers the oligarchy's control structures over their populations. As such, there would be extreme opposition to their acceptance, especially regarding their economic implementation. This is assuming they could not control them for their own advantage and profit.

So, at least for now, this author wishes to remain anonymous. There are minor reasons, such as resistance from mainstream physicists to new ideas from a novice who is not part of their hierarchy, resistance from industry related to new inventions that destroy profits, resistance from the military in order to sequester for advantage, and finally, and most importantly, resistance from the true hidden deep state governments in order to maintain the central control mechanisms over their populations.

But the major reason for remaining anonymous is encoded in the letters as follows (A. g. f. t. L. U. i. i. p. f. m., a. o. m.). As for now, this encrypted message will remain concealed, until, moreover, if this book's theories ever come to light. If so, compared to what these initials represent, then all that lies within this article then shrinks to insignificance.

Presuming the theories presented in this article are valid, furthermore, derived inventions come to fruition, then in the author's opinion, this will result in a paradigm shift relative to all of human history.

But as always with great change, there is enormous conflict as different factions vie to keep or newly obtain wealth, power, and control. And so, before the dawn of a new era, comes the night.

APPENDIX N

EQUIVALENCE PRINCIPLE, INERTIA, INERTIAL MASS, ETHER, ACCELERATION, AND RESISTANCE TO ETHER

Abstract

This appendix gives further explanation to the weak equivalence principal, inertia, inertial mass, ether, acceleration, and resistance from the ether.

In addition, this sequel is an adjunct to the postulates purposed in chapters 2 and 5 regarding the concepts given above. Before continuing, the author presents five illustrations representing some of these basic ideas. Furthermore, these entities all interconnect with one another. Nevertheless, in order to simplify the concepts, the first group of figures demonstrates each function individually. The reasoning behind this is: if one can understand each distinct definition, then for the reader, it will be much easier for him/her to appreciate their complex interactions especially when evaluating the subsequent passages.

What is more, to help the reader understand this appendix, the author has simplified/changed/clarified some of the terminology when compared to Chapter 2 (pages 36 to 46) and Chapter 5 (pages 273 to 278). Even so, it still would be helpful to review those chapters before appraising this appendix.

The first set of illustrations is enumerated below.

1. Illustration of the ether at rest (frame) and its relationship to an object (matter).
2. Illustration of the velocity ether wind (frame) and its relationship to an object.
3. Illustration of the accelerating ether wind (frame) and its relationship to an object.

4. Illustration of force and acceleration exerted on an object by a rocket (outside the frame of the ether) = $F = ma$.

5. Illustration of the resistance produced by ether as a function of the acceleration of an object (matter) by force.

N.1 Illustration of the ether at rest (frame) and its relationship to an object.

See Figure N.1 below.

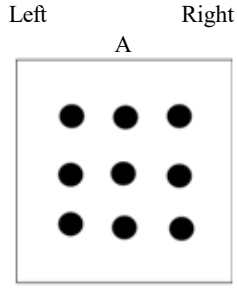


Figure N.1

- *The square is the object = A.*
- *The black circles located within the square depict individual atoms making up the object.*
- *The white area in and around the square represents the ether at rest.*
- *The object is also at rest with the ether.*
- *There is no interaction between the ether at rest and the object (atoms).*

N.2 Illustration of the velocity ether wind (frame) and its relationship to an object.

See Figure N.2 below.

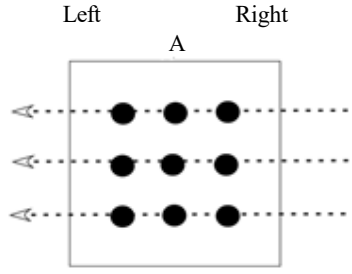


Figure N.2

- *The square is the object = A.*
- *The black circles are individuals atoms making up the object.*
- *The horizontal arrows with the dotted lines, right to left, represent the velocity ether wind frame.*
- *There is no interaction between the velocity ether wind frame and the object (atoms).*

N.3 Illustration of the accelerating ether wind (frame) and its relationship to an object.

See Figure N.3 below.

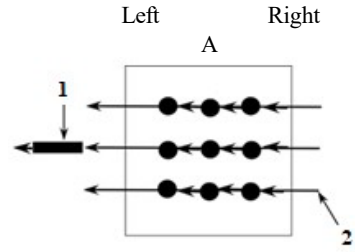


Figure N.3

- *The square is the object = A.*
- *The black circles are individuals atoms making up the object.*
- *The three long black solid horizontal arrows oriented right to left depict the accelerating ether wind frame.*
- *The solid black arrowheads, right to left, associated with each atom characterize acceleration directed at each individual atom separately within the object as a function of accelerating ether frame.*
- *1 represents the overall accelerated object moving in synchrony along with the accelerating ether wind frame.*

N.4 Illustration of force and acceleration exerted on an object by a rocket (outside the frame of the ether) = $F = ma$.

See Figure N.4 below.

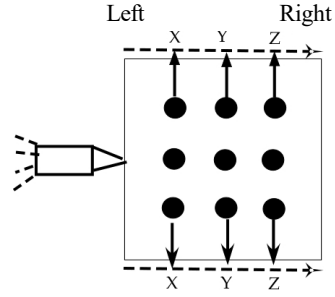
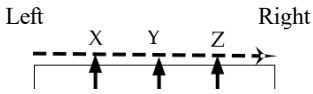


Figure N.4

- *The square is the object.*
- *The black circles are individual atoms making up the object.*
- *Assume the ether, which is at rest, is the white area located in and around the object.*
- *The rocket accelerates the object by force ($F = ma$), depicted by the horizontal arrows with the dotted lines pointed to the right labeled X, Y, and Z. This form of acceleration is linear sequential acceleration (LSA).*

• *In other words, the force from the rocket ($F = ma$) causing acceleration is linear and sequential from X to Y to Z (atom-to-atom) from one side of the object to the other side; →left side to right side← (see below).*



• *The black circles are individual atoms making up the object.*

• *For purposes of this illustration, X, Y, and Z are inaccurately depicted outside the object, but in fact, all the atoms within the object are affected the same way, from atom-to-atom, left to right.*

• *Assuming the object is initially at rest with the ether, then as function of the rocket's $F = ma$, it is accelerated to the right.*

• *Alternatively, presuming the object initially possesses motion to the left, the rocket's $F = ma$ (LSA) will slow that motion, stop that motion, or reverse that motion, depending on the magnitude and duration of $F = ma$.*

N.5 Illustration of resistance produced by the ether as a function of the acceleration of an object (matter) by force.

See Figure N.5 below.

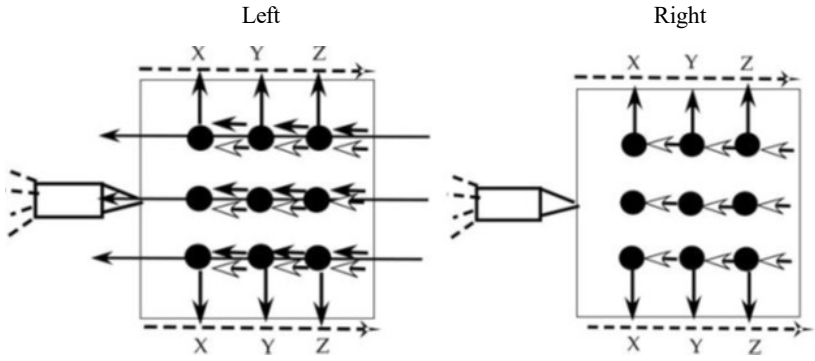
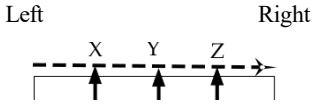


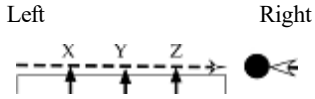
Figure N.5

• ***Right side***: *The object is initially at rest with the ether, also at rest. Subsequently, the $F = ma$ of the rocket then accelerates the object by linear sequential acceleration from left to right (LSA) (see below).*

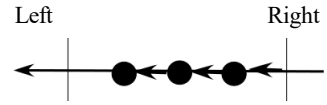


• *As a result, there is then resistance to this form of acceleration (LSA), which is individual atom resistance (IAR) within the object from the ether. The individual atom resistance (IAR) produced by the ether is represented by the single hollow arrows located adjacent to each atom pointing to the left, moreover, in opposition to the $F = ma$ of the rocket (see below).*

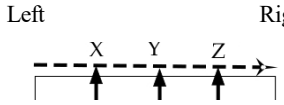
• *As a result, the object is compacted from both the LSA of the rocket and the resistance from the ether (IAR) (see below).*



• ***Left side: In contrast, the accelerating ether wind frame within the object accelerates each individual atom separately (IAA), from right to left (see below).***



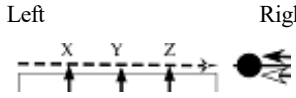
• *The rockets $F = ma$ (LSA) is in the opposite direction, left to right (see below).*



• *As a response to the rockets $F = ma$, this function then induces individual atom resistance (IAR) within the object from the same ether frame, again right to left (see below).*

• *In this case, the ether is both the accelerator and resister. Because of this dual function, it is illustrated by the hollow arrow and the solid arrow located side by side, both pointing at each individual atom to the left (see below).*

• *Again, the object is compacted from both the LSA of the rocket and the resistance from the ether (IAR + IAA) in opposite directions (see below).*



Now, after reviewing these five illustrations, it should be significantly easier for the reader to interpret, furthermore, understand the following complex figures and passages. Even so, it still will be necessary to integrate all the different concepts into one overall conceptual picture. The following figures and captions use the five basic definitions, as just presented, in conjunction with one another to give explanation to the weak equivalence principal, inertia, inertial mass, ether, acceleration, and resistance from the ether. They are labeled A thru E.

A. See Figure N.6 below.

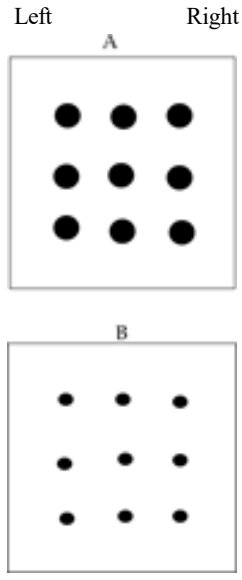


Figure N.6

- *The squares represent objects A (top) and B (bottom).*
- *The white area around and within the objects depicts the ether at rest.*
- *In addition, the objects are also at rest with the ether.*
- *The black circles located within the squares portray individual atoms that make up the objects.*
- *The larger black circles of A indicate that those atoms possess a greater atomic weight compared to the smaller circles of B.*
- *There is no interaction between the ether at rest with either object (atoms).*

Refer to Figure N.6 above. Picture in your mind an imaginary universe consisting of only the ether and two objects which differ from one another; they are of equal volume, but one has twice the atomic weight compared to the other. A = greater atomic weight, B = lesser atomic weight. Then, envision that A is positioned directly above B, both at rest within the ether of the universe also at rest. Now, pertaining to this specific setting, there is no interaction between the objects (atoms) with the ether.

A. See Figure N.7 below.

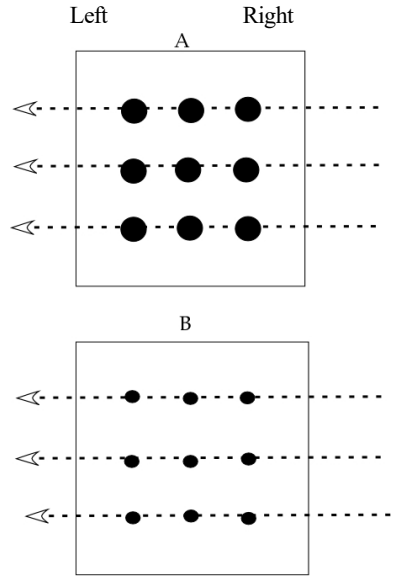
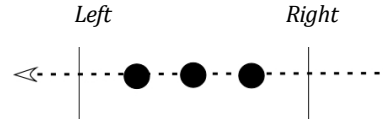


Figure N.7

- *Assume the same scenario as Figure N.4, but now there is a velocity ether wind from right to left.*
- *The squares represent objects A (top) and B (bottom).*
- *The horizontal dotted lines depict the velocity ether wind frame from right to left (see below).*



- *The black circles located within the squares portray individual atoms that make up the objects.*
- *The larger black circles of A indicate that those atoms possess a greater atomic weight compared to the smaller circles of object B.*
- *Again, there is no interaction between between the velocity ether wind and either object (atoms).*

Refer to figure N.7 above. Next, assume there exists a velocity ether wind (frame) from right to the left. As a result, again there is no interaction between the objects (atoms) with the velocity ether frame.

C. See Figure N.8 below.

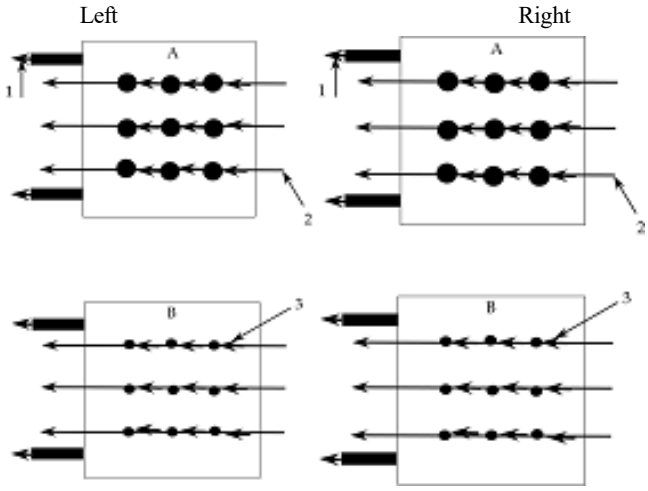
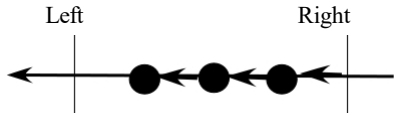


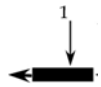
Figure N.8

- *Assume the same scenario as Figure N.4, but now, there is an accelerating ether wind from right to left.*
- *The squares represent objects A (top) and B (bottom).*
- *The black circles located within the squares portray individual atoms that make up the objects.*
- *The larger black circles of A indicate that those atoms possess a greater atomic weight compared to the smaller circles of object B.*
- *The horizontal solid lines with the solid arrowheads (2) from right to left illustrate the accelerating ether wind (see below).*



- *The black arrowheads located adjacent to each atom from right to left (3) portray individual atom acceleration as a function of the accelerating ether frame (2) (see below).*

- *The overall acceleration of the objects (A and B) as a function of the accelerating ether frame (2) is depicted by the large black arrows located to the left of each object and pointing to the left (1) (see below).*



- *The images right to left represent the change in movement over time.*
- *In this case, the accelerating ether wind accelerates both objects equally and symmetrically, independent of their different atomic weights, as there is no resistance.*

• *→The acceleration of both objects is also in synchrony with the accelerating ether frame (same rate of change), moreover, unaltered from right to left (time)←.*

Refer to Figure N.8 above. Now, presume instead of a velocity ether wind, there is an accelerating ether wind (accelerating frame), again from right to the left. In this second instance, there is now an interaction between the objects (atoms) as a function of the accelerated ether frame. For that reason, both objects, notwithstanding of their different atomic weights, symmetrically and equally accelerate synchronously along with ether wind's acceleration rate. This function is independent of atomic weight, →because there is no resistance (no inertial mass)←.

D. See Figure N.9 below.

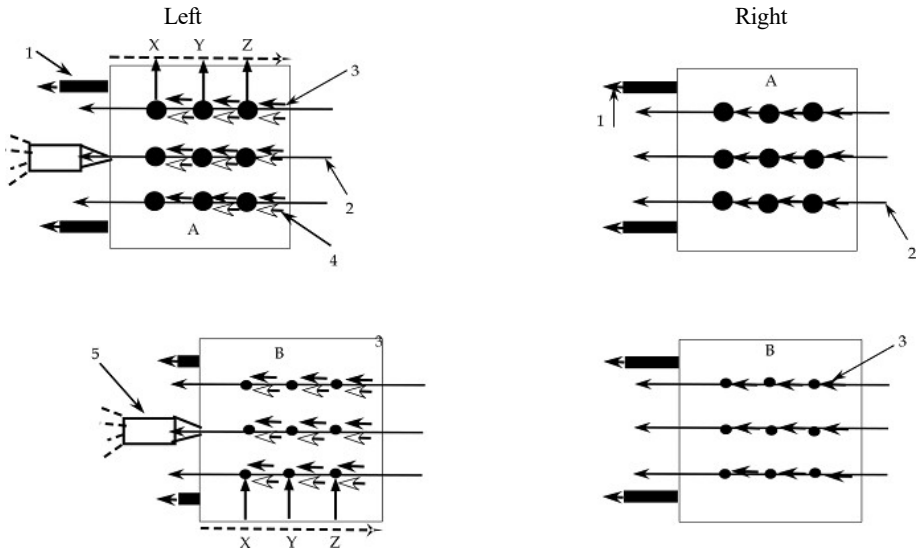


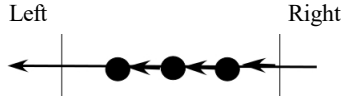
Figure N.9

• *The squares represent objects A (top) and B (bottom).*

• *The black circles located within the squares portray individual atoms that make up the objects.*

• *The larger black circles of A indicate that those atoms possess a greater atomic weight compared to the smaller circles of object B.*

• *The horizontal solid lines with the solid arrowheads from right to left (2) depict the accelerating ether wind frame. (see below).*



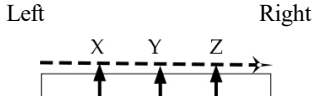
• *The black arrowheads located adjacent to each individual circle from right to left (3) portray individual atom acceleration within the objects as a function of the accelerating ether frame (2) (see below).*

• *The overall acceleration of the objects (A and B), as a function of the accelerating ether wind (2), is illustrated by the large black arrows positioned to the left of each object pointing to the left (1) (see below).*

• *The images, from right to left, portray the change in movement over time. On the right side, the objects are affected by the accelerating ether wind frame, and that induced motion over time is countered by the rockets located on the left side.*

• *(5) represents the identical rockets exerting* $F = ma$ *(LSA) against the frame of the motion of the objects.*

• *X, Y, and Z depict linear sequential acceleration, produced by the rockets, from atom-to-atom from one side of the object to its other side, left to right (from X to Y to Z) (see below).*



• *The hollow arrowheads and solid arrowheads viewed together (3 and 4) located adjacent to each atom represent resistance from the ether to the acceleration of the objects produced by the rocket; this is individual atom resistance from right to left (see below).*

• *So the same accelerating ether frame that accelerates the objects (3) independent of atomic weight then switches functions and resists the motion, produced by the rockets (3 and 4) but now as a function of atomic weight. This is why there are two arrows pointed at each individual atom within the objects to the left (see below).*

• *Again, because the ether is both the accelerator (black arrow head) and the resister (white arrow head) then under the influence of the rockets* $F = ma$ *(LSA) both of the arrows point to each and every atom individually in conjunction with one another from right to left (see below).*

Working together — not alone.

• *(A) with the greater atomic weight de-accelerates (relative acceleration) less than the one with the lesser atomic weight (B) thus the change noted in their relative positions with respect to Figure N.9.*

Refer to Figure N.9. After that, postulate that identical forces $F = ma$ (LSA) from the rockets are applied independently to each object, A and B, in the opposite direction of their accelerating frame motion. Consequently then, what happens? The one with the greater atomic weight (A) slows less than the one with the lesser atomic weight (B). This is because the same equally applied force from the rockets has less effect on A compared to B ($F = ma$). And this is because the inertial mass (atomic weight) of A is greater than B →as a function of the resistance from **only** the ether←. Note again that the forces from the rockets causing acceleration are sequential (atom-to-atom) from one side of the object to its other side, whereas the responding resistance from the ether is exerted on each atom separately within the objects.

E. See Figure N.10 below.

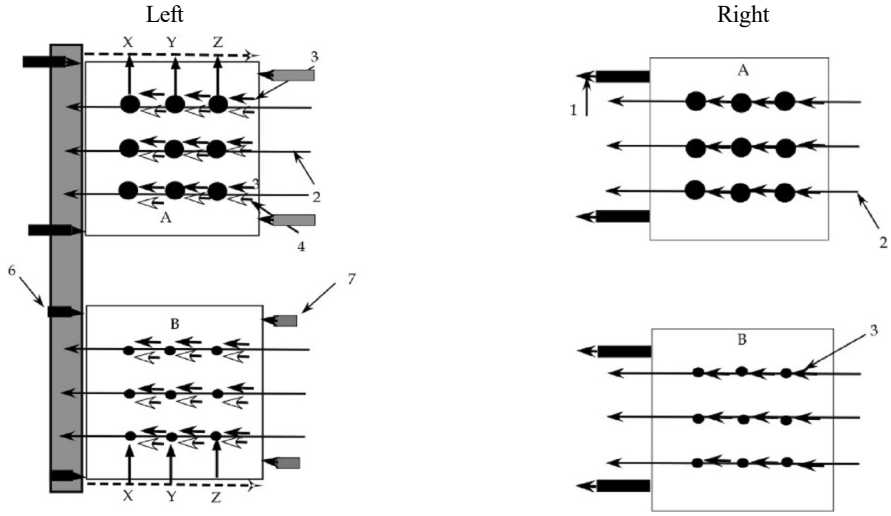
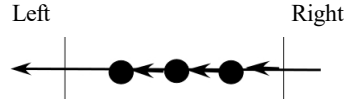


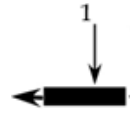
Figure N.10

- *The squares represent objects A (top) and B (bottom).*
- *The black circles located within the squares portray individual atoms that make up the objects.*
- *The larger black circles within A indicate that those atoms possess a greater atomic weight compared to the smaller circles within object B.*
- *The three horizontal solid black lines with their solid arrowheads (2) depict the accelerating ether wind, from right to left (see below).*



- *The black arrowheads located adjacent to each circle from right to left (3) portray individual atom acceleration as a function of the accelerating ether wind (2) (see below).*

- *The overall acceleration of the objects (A and B) produced by the accelerating frame (2) is illustrated by the large black arrows located to the left of each object and pointing to the left (1) (see below).*

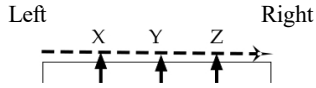


- *The images from right to left show the change in movement over time. On the right side, both objects are affected by the accelerating ether wind frame and then that accelerated motion at a later time is countered/blocked by the wall (left side).*

• *The rectangular gray vertical structure on the extreme left symbolizes a wall, which blocks the ongoing acceleration of the objects.*

• *In other words, assume the wall is at rest/fixed (blocking action) relative to the accelerating frame/objects.*

• *Therefore, when the objects crash into the wall (de-acceleration), this, in effect, is equivalent to acceleration against the motion of the accelerating ether frame/objects. The wall's blocking force/acceleration exerted on an object is sequential from atom-to-atom-to-atom = X to Y to Z (see below).*



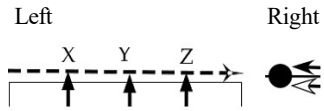
• *However, the responding resistance to this acceleration originating from the ether then acts on each atom within the object separately (3 and 4 together) (see below).*

• *Therefore, the same frame that accelerates an object (3) which is independent of atomic weight then switches functions and resists the change in the object's motion (3 and 4 together), moreover, now as a function of atomic weight. The dual function is the reason why there are two arrows pointed at each atom from right to left (see below).*

• *Again, because the ether is both the accelerator (black arrowhead) and the resister (white arrowhead), then under the influence of the blocking wall* $F = ma$ *(LSA), both arrows' resistance derived from the ether point to each and every atom separately and in conjunction with one another from right to left (see below).*

Working together — not alone.

• *Therefore, both objects are compacted (6 and 7). (See below)*



• *Since A has a greater atomic weight, it is compacted more than B, and the force exerted on the wall is also greater for A than B (momentum).*

Refer to Figure N.10 above Alternatively, given the same condition, hypothesize that both objects under the influence of the accelerating ether wind simultaneously crash into a wall, which itself is unaccelerated and fixed with respect to this frame (fixed blocking effect). As a result, both objects de-accelerate (relative acceleration = LSA) equally; notice, the force (momentum) excreted on the wall is greater for A relative to B, and the compaction of A is greater than B. This is because the inertial mass/momentum/atomic weight of A is again greater than B, →as a function of the resistance from **only** the ether←.

Before continuing, as revealed below, please review the hypotheses as portrayed in chapters 2 and 5 regarding inertial mass/inertia with its associated definitions/lexicology/symbolism, moreover, as to how

they relate to the inflow of the ether/space (PFGRT). In addition, after reviewing the following segment, please apply those concepts to the ideas just presented, then clarified in the ensuing section (Page 416 and continuing).

In the author's opinion, the following subject matter is extremely difficult to describe, so one needs to really reflect in order to appreciate it. Given the fact that it is so complex, with reference to the following discussion, there is considerable redundancy. Hopefully, the many viewpoints presented will help the reader eventually appreciate this highly abstract topic.

• Recollect, as already articulated in Chapter 2 (pages 36 through 46), the inflowing ether frame has a →velocity factor← as well as an →acceleration factor←. The following explanation refers to only the acceleration factor, which has two basic aspects as defined below.

• The accelerating factor of the inflowing ether frame (IAA, aka free-fall ether frame) acting alone, thereby producing a free-falling object, possesses two separate functions/aspects that are distinct but still interconnect with one another, the "**falling force aspect**" (IAA*) (dependent on atomic weight) and the "**acceleration aspect**" (independent of atomic weight) (IAA**).

• For further clarity, regarding a free-falling object, since the acceleration aspect of inflowing ether (space) (IAA**) acts equally and separately on all of the individual atoms, including atoms of different atomic weights, within the object, moreover, without a counteracting opposing force/resistance, then objects of different atomic weights "free fall" at the same rate—the weak equivalence principle. So, for that object, no compaction transpires (no inertial mass); the object is in geodesic/weightless/free-falling motion. Observe, vis-á-vis this scenario, atomic weight has no effect on the rate of fall. See site: http://aether.lbl.gov/www/science/equiv.html.

• In contrast, the falling-force aspect (IAA*) exerted on those same atoms (falling objects) is a function of their atomic weights. Consequently, this force will vary, even though the accelerations are all the same.

• Assume the resistance from the ether, which is a function of the acceleration of objects, relative to itself (ether) by an outside force (e.g., rocket, blocking Earth, LSA) is what produces inertial mass. So, if there is no relative acceleration, there is no resistance = no compaction/inertial mass. And if there is no inertial mass, then the falling force aspect (IAA*) will accelerate all objects (atoms) equally (→**because there is no resistance**←) independent of their different atomic weights; essentially, it transforms into the acceleration aspect (IAA**). This is how the falling-force aspect (IAA*) and the acceleration aspect (IAA**) interconnect (IAA = IAA+ IAA**). →They are actually two aspects of the same thing←. For this reason, atoms of different atomic weights free fall at the same rate, but their falling forces will differ.

• In summary, the falling force aspect (IAA*) vis-a'-vis free-falling objects (geodesic motion) is dependent upon atomic weight, thus diverse. Alternatively, the acceleration aspect (IAA**) exerted on the same objects is independent of atomic weight, so equal. For the latter reason, objects of different atomic weights, then free fall/accelerate at the same rate. This is because these objects manifest no inertial mass, and if there is no inertial mass (resistance) then the falling force aspect (IAA*) accelerates objects of different atomic weights equally, just like the acceleration aspect (IAA**) (actually, they are one and the same; IAA = IAA* + IAA**) = weak equivalence principle. Even so, again the force of falling, on the other hand, regarding those objects, varies as a function of atomic weight (IAA*).

The concepts, as just defined, refer to only the acceleration factor (IAA) and its two basic functions, the falling force aspect (IAA*) and the acceleration aspect (IAA**). The following definitions explain how the resistance from the ether interrelates with the attributes as just presented.

1. The inertial mass of an object is not the intrinsic property of the object as classically assumed. Rather, it is the object's interaction with the ether which produces that inertial mass. In essence, both entities are required, the accelerating object (LSA = linear sequential acceleration, $F = ma$) and the responding resisting ether (IAR = individual atom resistance), in opposite directions, resulting in compaction. →And so, if there is no accelerated interaction with compaction, then there is no inertial mass←.

2. The inertial mass of an object is a function of its acceleration relative to its own associated adjacent/internal ether, therefore inducing resistance from that frame (IAR) = compaction. Recall, the ether exists within the object as well as surrounding it, thus the term adjacent/internal.

3. If an object is at rest with the ether, or at a velocity relative to the ether, then there is no accelerated interaction (compaction). As such, the object is weightless in geodesic motion. Now, in that setting, we assume the object possesses inertial mass. However, the only way to demonstrate/prove inertial mass is to accelerate it with respect to its own accompanying adjacent/internal ether.

4. In other words, if the object is in geodesic motion, there is no way to prove that it possesses inertial mass. So the author posits this basic assumption: →An object in geodesic motion does not possess inertial mass, for in that setting, there is no accelerated interaction with its own adjacent/internal ether. Again, for that object, if there is no compaction/resistance, there is no inertial mass←.

5. As a corollary, when an object free falls to Earth, from the acceleration aspect of inflowing space (ether) (IAA**) without opposing resistance, it is weightless in geodesic motion. But most importantly, it is at rest with its own adjacent/internal-synchronized acceleration of the inflowing ether (free-fall ether frame). This last concept is very abstract—because the free-falling object is a product of the acceleration aspect absent resistance (IAA**). However, unless it is further accelerated (LSA) with respect to its own free-fall ether frame with responding resistance from that frame, inertial mass cannot be proved or demonstrated.

6. This theory posits that when an object is at rest with the ether, at a velocity relative to the ether, or else at rest with its own adjacent/internal-synchronized, accelerating, inflowing ether (IAA = IAA* + IAA**), it then possesses no inertial mass (no compaction/no resistance).

7. Only when an outside force (LSA, $F = ma$, rocket), accelerates an object, relative to stationary ether, velocity of ether, or again relative to its own adjacent/internal-synchronized accelerating inflowing ether (IAA), all with compaction/resistance, does it then exhibit inertial mass. In all other settings, it manifests no inertial mass.

8. →In the simplest terms, the concept is this: Whenever an object is in geodesic motion (weightless), then at that time, in and of itself, it possesses no inertial mass←.

9. The inertial mass of an object is a function of its acceleration (or relative acceleration) applicable to its own adjacent/internal ether by an outside force ($F = ma$, LSA), furthermore, with an opposing resistance generated from that ether frame (IAR) = compaction. Only as a product of compaction is then inertia present. However, in contrast, it is not inversely related to the inflowing ether's individual atom acceleration (IAA) exerted upon the object without resistance, whereby there is no compaction. So, without the object's compaction, one cannot prove or demonstrate inertia or inertial mass.

10. To recap, imagine a free-falling object in geodesic motion. The object's motion is a product of both the acceleration aspect (IAA**) and the falling force aspect (IAA*), which are separate functions; nevertheless, they still interconnect (IAA = IAA* + IAA**). Accordingly, objects of dissimilar atomic weights free fall equally not withstanding that their falling forces differ dependent upon atomic weight. If there is no resistance/inertia, then the falling force aspect (IAA*) accelerates all objects equally; it transforms into the acceleration aspect (IAA**). Again, this is how the falling force aspect (IAA*) and the acceleration aspect (IAA**) interrelate. It is only when the free-falling object is further accelerated (LSA) relative to its own already-accelerated frame, free-falling ether frame (IAA), such as from rocket—LSA, that the resistance from the ether then emerges. So at that time, the object becomes compacted = inertial mass.

Now, employing the symbolism/vocabulary of chapters 2 and 5 as imparted above, furthermore, correlating/intertwining them with the concepts defined at the onset of Appendix N, then from the reference frame of the two objects (A and B in Appendix N), the accelerating ether wind frame is equivalent to the acceleration factor—IAA = falling force aspect (IAA*) + acceleration aspect (IAA**). And the wall is representative of force, $F = ma$ (blocking LSA) exerted on the objects in opposition to that accelerated ether frame. Consequently, there exists a responding resistance from that frame (IAR + IAA). Again, recall the force/acceleration on objects from the wall is linear sequential atom-to-atom (LSA) while the effect from the ether is related to individual atom resistance located within the object (IAR + IAA). So there is then compaction/inertia/inertial mass.

These descriptions are very complex; therefore, see important concepts below. Please interrelate the conceptions presented in chapters 2 and 5 as reviewed above (inertia /inertial mass/PFGRT) with that now presented below (objects A and B, Appendix N).

Here are the important elements, complex yes, nevertheless still necessary for understanding and evaluating this hypothesis.

• The accelerating ether wind frame accelerates all objects (atoms) equally, independent of atomic weight, because this frame affects each and every atom individually within the object →without resistance← (the latter of which produces inertia/inertial mass). →For this reason, objects then accelerate in synchrony along with the accelerating ether frame (IAA**)←. Again, this is because if there is no resistance, there is no compaction or inertia/inertial mass. This is the reason why objects of different atomic weights free fall to Earth at the same rate—no resistance, therefore, no compaction/no inertia/no inertial mass; the weak equivalence principle. Even so the force of falling (object/atoms) is still dependent on atomic weight (IAA*).

• However, whenever an outside force ($F = ma$, rocket or wall) de-accelerates the object (actually relative acceleration = LSA), against the motion of the accelerating frame/object, then as a function of this same frame (accelerating ether wind frame), there is then a responding resistance within the object (IAA +IAR), resulting in its compaction (inertial mass), moreover, now dependent on atomic weight.

• Discern, regarding these examples, the same ether is both the accelerator, independent of atomic weight and the resister, dependent on atomic weight. In addition, the de-acceleration (actually relative acceleration) of the objects produce by the rockets/wall (blocking effect = $F = ma$,) against the accelerating wind frame/object is sequentially from atom-to-atom originating from one side of the object to the other side and is dependent on atomic weight (LSA).

• This type of acceleration (LSA) contrasts with that other form of the acceleration produced by the ether, which is not a function of atomic weight, moreover, is exerted on individual atoms separately within the object (IAA**).

• Another way of perceiving all of this is: The accelerating ether wind acts upon each separate atom within the objects (objects A and B) without compaction (no resistance, therefore, no inertial mass). →Consequently, there is symmetry between the motion of the accelerating ether frame and the resultant accelerated motion of the objects← (A and B). See Page 410 (C, Figure N.8) for further explanation and labeling. Also refer to images below.

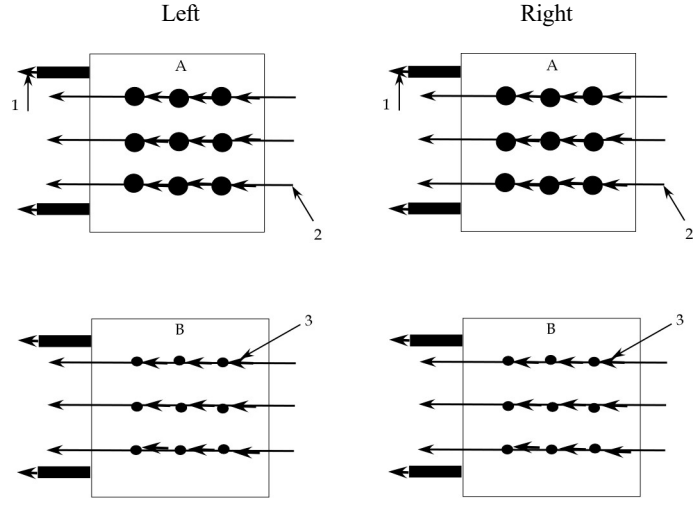


Figure N.11

C, Figure N.8, Page 410, Right to left = symmetrical movement of A and B over time

Repeat of Figure N.8, right to left = symmetrical movement of A and B over time. →This is only somewhat analogous to a row boat and an equivalent volume of Styrofoam transported equally by the flow of a river. They have different masses, but their rate of flow is identical. However, when those free-floating

objects strike a fixed object located within the river their differing inertia masses then becomes apparent (momentum of boat > Styrofoam)←. This later scenario blocking effect is not shown in Figure N.11.

• On the other hand, whenever this →combined synchronized motion← is disturbed/changed ($F = ma$, LSA, outside force = rocket and wall), this very same ether then resists that change, resulting in compaction (There is now inertia/inertial mass from only the ether.). See D, Figure N.9, (rocket) Page 411 and E, Figure N.10, (wall) Page 413 for further clarification and labeling. Also note the explanations below.

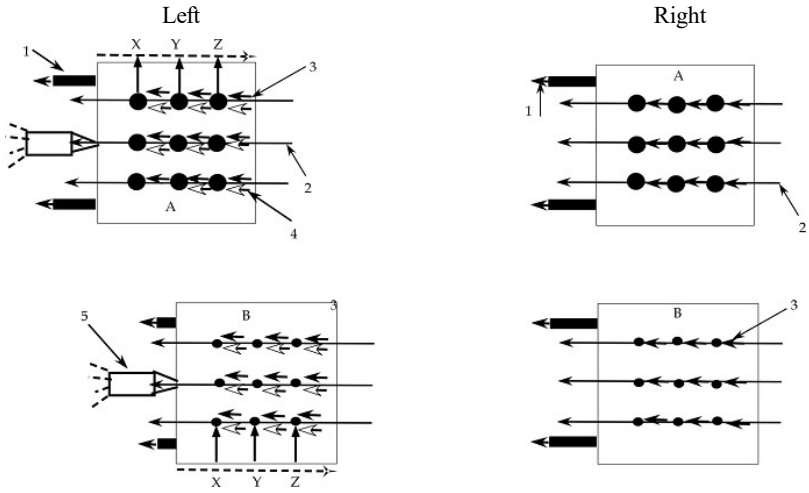


Figure N.12
Repeat of D, Figure N.9, Page 411

Relevant to Figure N.12 left above, since A and B now possess inertial mass, then the equal rockets (F = ma, LSA) decelerate (A < B). And vis-á-vis Figure N.13 left below, object A possesses more momentum compared to object B, as they both simultaneously crash into the blocking wall. This is because, with respect to both scenarios, A and B now possess inertial mass (A > B). This is a function of the different amounts of resistance derived from **only** the ether to the objects differing atomic weights (while undergoing deceleration (LSA).

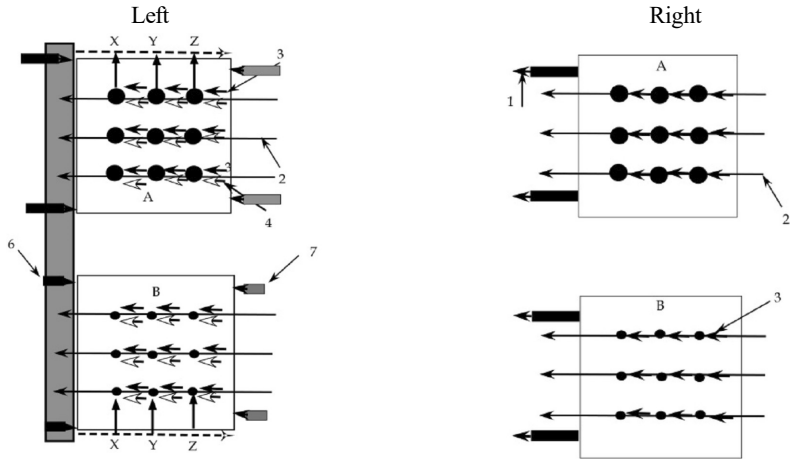


Figure N.13
Repeat of D, Figure N.10, Page 413

• In effect, the rockets and the wall disturb this →combined synchronized motion← by means of an outside force (outside the frame of the ether), $F = ma$, LSA. This outside form of force exerted on the object is sequential from atom-to-atom from one side of the object to the other (LSA), consequently inducing individual atom resistance within the object from the accelerating ether wind fame (IAR +IAA) = compaction of the object = inertia/inertial mass.

• **→Therefore, the *ether's resistance* to acceleration of an object by an outside force (e.g., rocket, wall = LSA) relative to only itself (ether) is what actually produces inertia/inertial mass←**.

• The function of the ether, whether acceleration or resistance, is always exerted on the individual atoms separately within the object. In contrast, the outside force (e.g., rocket) is sequential atom-to-atom from one side of the object to its other side. Fundamentally, **→there are two different types of accelerations←** which then interact with one another, vis-á-vis objects (matter), in a very complex manner = inertia, inertial mass, ether, acceleration, and resistance from the ether.