It’s debatable!

what we can know despite what we don’t

Dr Michael Heffron developed these slides for presentation during Aether Round Table 63 discussion (available on the Space Audits channel of YouTube, https://www.youtube.com/live/ryOfuIIDPZ0?si=7E7NovRpuLQaoz5K), and hereby gives permission to freely distribute these presentation slides.

I’d like to thank Cass and Eric for their suggestions to improve this presentation, and I apologize to everyone for any mistakes that may remain.

It's challenging to break free from indoctrination by false information, so I understand why Mike of Conspiracy Toonz believes what he does.

Nevertheless, I was surprised to hear McToon’s relativistic mysticism that mischaracterized the goal and results of Airy’s 1871 experiment (starting at 2:02:24 of Aether Round Table 62).

I was very, very impressed by how calm and respectful Piezo was during that discussion. He was a role model for all of us!

McToon’s relativistic mysticism inspired this presentation, which is my attempt to be minimally tutorial while discussing how we can acquire knowledge and wisdom despite misdirection, widespread lies, skepticism, and many gaps in our knowledge.

This material is applicable to debates, particularly about how to minimize non-productive discussions.

At any time during this presentation, please ask me to go back or clarify anything that seems unclear or confusing.

Also feel free to interrupt at any time with questions.

For much more background/support material, please refer to my book “The Luminiferous Aether” (available from https://www.amazon.com/dp/B0CP8KTKPW).

Hypothesis testing

Null hypothesis is…	True	False
Rejected	**Type I error** **False positive** **Probability = α**	**Correct hypothesis** **True positive** **Probability = 1-β**
Not rejected	**Incorrect hypothesis** **True negative** **Probability = 1-α**	**Type II error** **False negative** **Probability = β**

In 1908, William Sealy Gosset developed “small sample” hypothesis testing.

This form of modern hypothesis testing recognizes that a hypothesis can’t be “proven” to be correct.

Rather than arguing the validity of a hypothesis, Gosset advocated demonstrating the falsity of its opposite (which is called a null hypothesis).

That is what many universities require their doctoral students to do.

A major advantage of this form of modern hypothesis testing is that there is no need to validate assumptions or hunches.

Any invalid assumptions will cause the null hypothesis to be true, which means the hypothesis is incorrect.

Another advantage of this form of hypothesis testing is that doctoral students can swap the hypotheses to redeem their doctorate if the original hypothesis was wrong.

The green text at the intersection of false & rejected represents our goal of rejecting a false null hypothesis.

Some examples of rejecting the null hypothesis will be coming up soon.

Galton board

In the late 1800s, Sir Francis Galton invented a “bean machine” that later came to be known as a Galton board.

In this modern version, tiny balls bounce off the pegs in random order so that we can’t know what path they will take,

and yet we can know the balls will ultimately form a “bell curve” that indicates what is called a “normal distribution” of the random probabilities.

This “normal distribution” of random events is an example of something we can know about the things we do not know.

To become wise, we must learn…

…there are things we do not know

…there are flaws in what we think we know

…where truth lies (double meaning)

…God uses simple things to confound the “wise”

To become wise, we must learn…

…there are things we do not know,

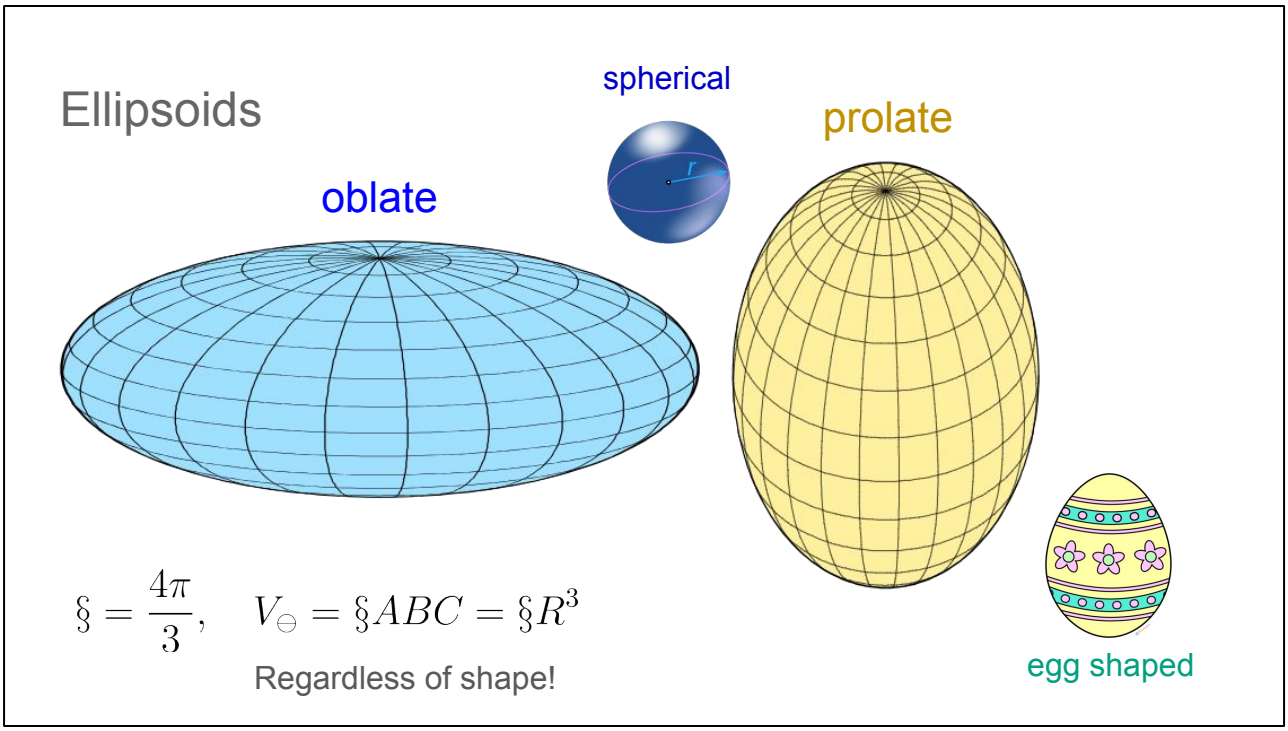
…there are flaws in what we think we know,

…and we must learn where truth lies.

“Where truth lies” has a double meaning!

Finally, we must learn that God uses simple things to confound the “wise.”

Some people prefer to call that Occam’s Razor.



Many researchers believe that the Earth and other planets are not actually spheres,

but instead are slightly oblate due to the combined effects of gravity and rotation.

Let that sink in!!!

There is really no debate about whether the Earth is flat or round,

the debate is really about how flat or how round.

This presentation will discuss topics such as subatomic particles and ellipsoids to promote clarity, not to endorse the validity of any of those concepts.

For the sake of this discussion, let's assume for a moment that subatomic particles actually exist as ellipsoidal whirls of aether.

Ellipsoids may be spherical, "oblate" (flattened like an M&M, or the Earth), "prolate" (elongated like a rugby ball), or egg shaped things.

This presentation uses the section symbol to represent the 4π over 3 scalar that converts the product of the axes into the volume of an ellipsoid.

The important point to understand is that the volume of an ellipsoid does not depend upon knowing its shape.

During this presentation, it is important to understand that any reference to a radius refers equally well to a semi-major axis!!!

CITATION: Diagram “By Tomruen - Own work, CC BY-SA 4.0, https://commons.wikimedia.org/w/index.php?curid=56702258” with numerous overlays to identify spherical, oblate, prolate, and egg shaped things.

Michelson-Morley experiment

Ingenious interferometer

Didn't detect Earth moving through aether

- Failed to consider Earth might not be moving
- Failed to consider aether might be moving with Earth

Many foolishly concluded luminiferous aether didn't exist

Let's now examine what was wrong with the Michelson-Morley hypothesis.

They claimed to be looking for luminiferous aether,

but they were really looking for evidence the Earth was traveling 30 km/s through stationary aether.

Michelson knew how to build an ingenious interferometer.

When they didn't detect the expected motion, they considered several other alternatives, but

they failed to consider that the Earth might not be moving,

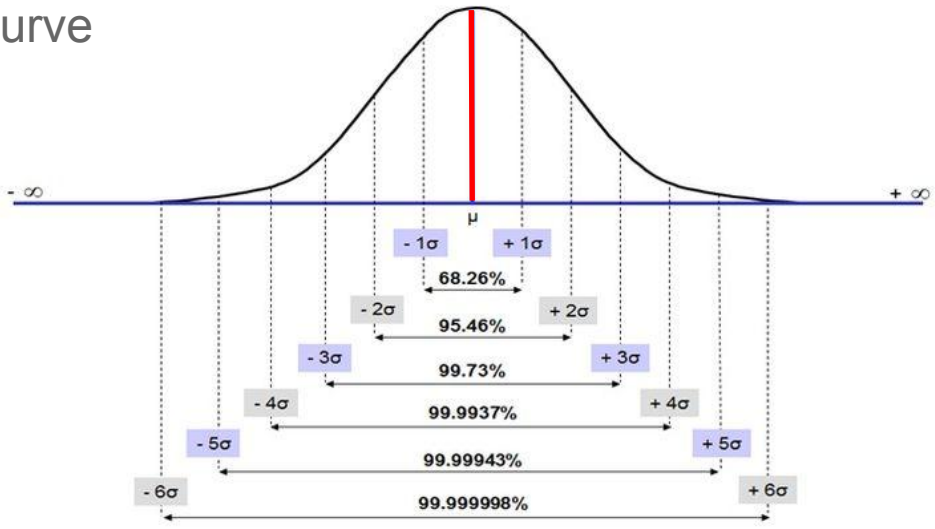
or might not be moving as fast as they thought,

or that the aether might be moving with the Earth.

As a result, many people foolishly concluded luminiferous aether didn't exist.

In their defense, all of this craziness occurred two decades before Gosset proposed "small sample" hypothesis testing.

Bell curve



Only a mathematician could love the probability and statistics required to reject a null hypothesis.

I'll leave the complexities of hypothesis testing for independent research by anyone who is interested, but here is an overview of the most important concepts...

This "bell curve" illustrates what is called "standard deviations" (denoted by Greek letter sigma within the shaded rectangles) from a midpoint (denoted by Greek letter mu under the red center line).

A standard deviation of $\pm 1\sigma$ produces a 68% probability of rejecting a false null hypothesis.

Similarly, a standard deviation of $\pm 2\sigma$ produces a 95% probability of rejecting a false null hypothesis, and

a standard deviation of $\pm 3\sigma$ produces a 99% probability of rejecting a false null hypothesis.

The requirement for many doctoral dissertations is to reject the null hypothesis with level of confidence between 2 and 3σ.

There are many things we don't know about the luminiferous aether, so let's use that as an example of what we can know about what we don't know.

Another reason for using the aether as an example is that the theories of relativity are necessary solely to explain physical behavior without aether.

This presentation is now about to begin identifying the important properties of the luminiferous aether.

It will demonstrate that those properties consistently determine the values of the fundamental constants of physics to a level of confidence that far exceeds 6σ.

In other words, my goal for this presentation is to demonstrate there is less than one chance in a billion that the aether does not exist and was not responsible for producing the fundamental constants of physics.

A better hypothesis

Hypothesis: Luminiferous aether produces the fundamental constants of physics

Null hypothesis: Luminiferous aether does not produce the fundamental constants of physics

We need to begin with a much better hypothesis than that of Michelson & Morley,

one that excludes dubious theories of the Earth's velocity and other such nonsense.

A better hypothesis would have been that "luminiferous aether produces the fundamental constants of physics."

Thus, the better null hypothesis would have been that "luminiferous aether does not produce the fundamental constants of physics.

That is a null hypothesis that meets the goal of being easily falsifiable.

In other words, it is fairly easy to determine whether aether does or does not produce any given fundamental constant of physics.

If the null hypothesis is false and rejected to a suitable level of confidence, we will have that level of confidence the hypothesis is probably not wrong.

Precision measurement

Ratio measurements

Null meter

Fifty years ago this year, my job in the Air Force was to calibrate Precision Measurement Equipment Laboratory reference standards to match the National Bureau of Standards.

That bureau was the predecessor to NIST, which is an acronym for the National Institute of Standards and Technology.

The major contributor to NIST's exceptional accuracy and precision was the use of ratio measurements and a null meter that had no current flow when ratios were identical.

That is analogous to no aether flow when the ratio of aether properties reach equilibrium.

You will be seeing a lot of that in the remaining slides.

Mass

$$m = \rho V_{\ominus}$$

If subatomic particles really exist, we don't know whether they are ellipsoids,

or vortices,

or rapidly spinning disks,

or spewing streams.

None of that really matters!

It's important to think about what matters and what doesn't before a debate or hypothesis testing begins.

Despite not knowing the shape,

we can know that mass must be the volume times the density of the substance within that volume.

That is an inherent property of the definition of density as mass per volume.

Propagation “speed”

$$c = \sqrt{\frac{P}{\rho}}, \quad \therefore \quad P = \rho c^2$$

If you consult with AI or Wikipedia, they will do their best to convince you that determination of propagation speed is very complex.

To quote Wolfgang Pauli, “Das ist nicht einmal falsch” (meaning “That is not even wrong”).

Pauli meant that as an insult for theories that couldn’t be proven wrong.

By using a null hypothesis, you can totally disregard the assertion of any debater that a problem is more complicated than you are making it.

If the problem ***is*** more complicated than you are making it, then the null hypothesis will be true thereby demonstrating the hypothesis is wrong!

On the left is an old equation for the propagation “speed” of waves in an ideal gas.

It is from the days before modern physics factored in other effects such as quantum mechanics.

Its consequence is that pressure is equal to density times the square of the propagation velocity.

Let’s assume that these equations apply to the luminiferous aether and the speed of light therein.

Again, remember the null hypothesis will be true and therefore not rejected if any of those assumptions are incorrect.

The wonderful, **wonderful** thing about a null hypothesis is that there is no need to debate nor validate any assumptions or hunches.

It is either true or not true.

Kepler's Third Law

$$\varkappa = v^2 r = \left(\frac{2\pi r}{t}\right)^2 r \quad \therefore \quad r = \sqrt[3]{\frac{\varkappa t^2}{4\pi^2}}$$

Aether Round Table 56 (https://www.youtube.com/live/KQsyEUXG3xQ?si=0CI_hguJohrvUZct) thoroughly discussed how Kepler's Third Law produces the gravitational parameter for any given body.

That presentation used the ancient Greek letter Koppa to represent the gravitational parameter,

which is equal to the velocity squared times the radius of orbit for any satellite of the body being orbited.

It is very important to realize this is not the only way to calculate the gravitational parameter, and

that the gravitational parameter merely quantifies the presumed orbit of a satellite around a body.

To observers who assume they are on a globular Earth that spins on its own axis once per 86,164 seconds and revolves around the sun once per 365.25 days,

a proportionally-sized glowing orb at 26,610 km above the "center" would appear to "orbit" their globe once per day and thus be indistinguishable from the sun.

For those of you who want to do that math yourself, beware of the fact the period

must be half a day to appear to orbit that assumed rotating globe once per day!

Another important thing to note is that the gravitational parameter is different for a flat Earth than for a globe Earth, because the radius from the center is different.

Moreover, the “center” of a globe Earth would be about 6,400 km below ground level, so the altitude of the glowing orb above the surface would be 20,210 km.

Size of black holes

$$R_L = \frac{\varkappa}{c^2}$$

A consequence of the gravitational parameter applied to the orbit of an unobstructed satellite, is that a sufficiently low orbit must ultimately reach the speed of light.

In other words, there must be a black hole at the core of all celestial bodies and all subatomic particles.

Dr Bennett is correct when he argues that the implications of the phrase "black hole" make that poor terminology,

but for this presentation I'm committed to use my inadequate terminology to ensure clarity that it refers to the same general concept.

Perhaps in the future I'll call it a "luminiferous convergence" or some other terminology that better distances itself from the errors and folklore currently associated with black holes.

Nikola Tesla believed that matter consists of whirling aether, which reverts to random aether when it "transforms" from matter into energy.

In other words, mass consists of some volume that somehow encapsulates aether.

This equation shows that the luminiferous radius of any given body is equal to its gravitational parameter divided by the speed of light squared.

Throughout this presentation, remember that all references to luminiferous radii apply equally well to the semi-major axes of ellipsoids.

Surface tension of black holes

$$\gamma = PR_L = \rho\varkappa$$

$$\varkappa = \frac{\gamma}{\rho}, \quad R_L = \frac{\gamma}{P} = \sqrt[3]{\frac{m}{\S\rho}}$$

The surface tension of any black hole is its luminiferous radius times the pressure of the aether, or the density of the aether times the gravitational parameter of the black hole.

In turn, that means the gravitational parameter of any black hole is its surface tension divided by the density of the aether,

and the luminiferous radius of any black hole is its surface tension divided by the pressure of the aether.

Since the mass of a black hole is its volume times the density of the aether, that equation can be reversed to find the luminiferous radius of the black hole from its mass (as shown in blue).

What these and the preceding equations reveal is that if matter consists of vortices, they are vortices that behave like ellipsoids.

Similarly, if matter consists of disks/holes/slits, those disks/holes/slits must spin fast enough to behave like ellipsoids.

Classical electron radius

$$r_e = \left(\frac{1}{4\pi\varepsilon_0}\right)\left(\frac{q^2}{m_E c^2}\right) = R_P$$

$$r_e = \left(\frac{1}{4\pi\left(\frac{q^2}{4\pi}\right)\left(\frac{1}{P\S R_E^3 R_P}\right)}\right)\left(\frac{q^2}{\rho\S R_E^3 \frac{P}{\rho}}\right) = R_P$$

R_P = 2.817940320500000 x 10^{-15} m

The left side of the top equation shows how classical physics defined the electron radius.

What it actually represents is the radius at which an electron presumed to be "orbiting" a proton reaches the speed of light.

In other words, the classical electron radius is equivalent to the luminiferous radius of a proton.

That enables us to calculate the volume of the aether encapsulated within the bounds of a proton.

Knowing that volume enables accurate calculation of the density and pressure of the aether.

I'll demonstrate how to do that a few slides ahead.

The color-coded expansions in the lower equation emphasize how the luminiferous aether produces each component of the classical electron radius,

and makes it obvious how all of those terms cancel each other leaving only the luminiferous radius of the proton.

The classical electron radius is crucial for accurate calibration of the properties of the luminiferous aether,

but I didn't realize that yet when I first deduced the existence of the luminiferous radius.

Please accept my apology for not yet explaining how the luminiferous aether produces each of these fundamental constants.

Please remember from a few slides ago that the section symbol represents the 4π over 3 scalar that converts the radius cubed into the volume of an ellipsoid.

Before we move on, notice the absence of any relativistic correction for the electron traveling at the speed of light.

Gravitational parameter of proton

$$\varkappa_P = \frac{q^2}{4\pi\varepsilon_0 m_E}$$

$$\varkappa_P = \frac{q^2}{4\pi\left(\frac{q^2}{4\pi}\right)\left(\frac{1}{P\S R_E^3 R_P}\right)\rho R_E^3} = \frac{P R_P}{\rho} = c^2 R_P$$

$\varkappa_P$ = 2.532638456420667 x 10^2 m^3/s^2

Various equations from prior slides lead to the top equation for the gravitational parameter of a proton.

The color-coded expansions in the lower equation emphasize how the luminiferous aether produces each component of the gravitational parameter of the proton,

and makes it obvious how all of the terms cancel each other leaving only the speed of light squared times the luminiferous radius of the proton.

That last term is Kepler's Third Law, which applies equally well to the subatomic realm as it does to the cosmos.

Again, notice the absence of any relativistic correction for the electron traveling at the speed of light.

Mass flux of the aether

$$\varphi = \frac{m_P\, c}{\S\, r_e^3} = \frac{\rho \S R_P^3}{\S R_P^3}\sqrt{\frac{P}{\rho}} = \sqrt{\rho P}$$

aether.massFlux = nist.protonMass*nist.speedOfLight/(§nist.classicalElectronRadius^3)

5.349762541700259e+24 k^1*m^-2*s^-1

C = coulomb

k = kilogram

m = meter

s = second

All of my data throughout this presentation were generated by a small JavaScript program that creates aether and NIST objects that are able to identify values and the variables that produced them.

That JavaScript program is available from my https://github.com/DrMikeHeffron/LuminiferousAether repository.

By design, after considerable deliberation, the only units of measure supported by my quick & dirty software are Coulombs, kilograms, meters, and seconds.

As demonstrated by the green units of this mass flux example, my software requires each unit to use a caret to separate it from a positive or negative exponent,

followed by an asterisk to separate it from the next unit of measure.

The upper right corner of this and future slides will contain a blue equation to show how the aether produces each constant being presented.

The text below the title of each slide shows the JavaScript objects and the mathematical operations applied to them.

Besides not knowing the shape of subatomic particles, we also don't know what comprises the luminiferous aether of which they consist.

Aether might be made of neutrinos, quantum fluctuations, turtles all of the way down, pressurized bubbles boiling within the density of liquid aether, or something else entirely.

Despite what we don't know about the aether, we can easily calculate the mass flux of the aether from NIST values for the mass of the proton, speed of light, and volume of the proton.

Density & pressure of the aether

$$\rho = \frac{\varphi}{c}, \quad P = \varphi c$$

aether.density = aether.massFlux/nist.speedOfLight

1.7844887017472l3e+16 k^1*m^-3

aether.pressure = aether.massFlux*nist.speedOfLight

1.6038184620926 48e+33 k^1*m^-1*s^-2

The prior slide calculated the mass flux of the aether solely for use as a calibration standard for the density and pressure of the aether.

As this presentation will now begin to demonstrate, all of the fundamental constants of physics derive from the density and pressure of the aether.

Density and pressure derive from the mass flux of the aether.

Mass flux is the momentum of the aether per volume.

Momentum of the aether

× dimension →	× velocity →		
	mass (kg)	momentum (kg·m/s)	energy ($kg \cdot m^2/s^2$)
	linear density (kg/m)	mass flow (kg/s)	force ($kg \cdot m/s^2$)
	area density (kg/m^2)	viscosity (kg/m·s)	surface tension (kg/s^2)
	density (kg/m^3)	mass flux (kg/m^2s)	pressure ($kg/m \cdot s^2$)

This table illustrates how all of the fundamental constants of physics derive from the density and pressure of the aether.

By now it should be obvious there are many different ways to calculate luminiferous radii, gravitational parameters, surface tension, etc.

It is easy to view the attributes in this table as different measurements, because each requires its own unique measuring device.

A more thorough examination reveals that these attributes are actually just different ways to view the momentum of aether particles.

Just as water molecules in a bucket simultaneously exhibit all of these attributes and many more,

the aether contained within any volume simultaneously exhibits all of these attributes and many more.

Speed of light, Boyle's law

$$c = \sqrt{\frac{P}{\rho}}, \qquad P = \rho c^2, \qquad \frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$$

All of the values for the fundamental constants of physics for the remainder of this presentation derive from the properties of the aether.

The speed of light is the square root of aether pressure divided by aether density.

Although NIST declares the speed of light to be constant and exact, it is actually a very stable variable that is subject to Boyle's Law.

This presentation won't go into the impact of temperature,

but it is important to realize the speed of light depends on the temperature of the aether in the same way the speed of sound depends on the temperature of the air.

None of the physical constants are really constant, all are extremely stable variables.

That is why ratio measurements are so important to NIST, and

it has important implications for red shift, blue shift, Cosmic Microwave Background Radiation, the Hubble constant, and much more.

Speed of light

$$c = \sqrt{\frac{P}{\rho}}$$

```
(aether.pressure/aether.density)^0.5

aether: = 2.997924580000000e+8 m^1*s^-1
                        ↕ (match until 10th digit)
NIST:   = 2.99792458(exact)e+8 m^1*s^-1
```

The next few slides of this presentation will demonstrate that the only thing that really matters is the high degree of accuracy to which we know the density and pressure of the aether.

For all comparisons of aether values to NIST values, my software always stops at the first non-matching digit even though the remaining digits may round to an exact match.

The dark green digits represent at least a 6σ match that meets my goal for this presentation.

In other words, the green digits indicate the null hypothesis is false and should be rejected.

The blue digits represent a match well beyond my goal.

NIST states the accuracy of their measurements inside parentheses at the end of the measured value.

In this case, they declare the speed of light to be an exact value.

The astute debater will point out that the speed of light was intentionally calibrated to be this accurate.

Touché! I concede that point.

Luminiferous radius of light

$$R_\lambda = \frac{\gamma_\lambda}{P} = \frac{\rho \varkappa_\lambda}{P}$$

`light.surfaceTension/aether.pressure`

```
aether: = 2.4263102353800004e-12 m^1
                              ↕ (match until 13th digit)
NIST:   = 2.42631023538(76)e-12 m^1
```

The luminiferous radius of light is equal to the Compton wavelength or the de Broglie wavelength for an electron traveling at the speed of light.

In this example, NIST declares the last two digits of its value for the Compton wavelength are accurate to ±76.

The green digits indicate the null hypothesis is false and should be rejected.

The blue digits again represent a match well beyond my goal.

Whether true or not, it can be argued that this too was essentially calibrated to be this accurate.

Elementary charge (q)

$$q = \sqrt{\left(\frac{10^7 \mathrm{C}^2}{\mathrm{kg} \cdot \mathrm{m}}\right) m_E R_P}$$

```
(aether.cgs2mks*electron.mass*proton.radius)^0.5
```

```
aether: = 1.60217663390479 2e-19 C^1
                          ↕ (match until 10th digit)
NIST:   = 1.602176634(exact)e-19 C^1
```

What we call the elementary charge was originally the Faraday constant divided by the Avogadro constant.

Currently NIST defines the elementary charge as an exact value.

My software calculates the elementary charge as the square root of the quantity electron mass times the luminiferous radius of a proton times a conversion factor.

That conversion factor compensates for the fact the original constants used the **centimeter gram second** system rather than the modern **kilogram meter second** system.

The green digits indicate the null hypothesis is false and should be rejected.

Finally here we have reached a value that was not intentionally calibrated to be this accurate.

The mass of the electron and the luminiferous radius of the proton both derive solely from the density and pressure of the aether plus Kepler's Third Law.

Notice the kg·m in the conversion factor is what converts the mass of the electron and radius of the proton into Coulombs squared.

That will be important when we reach the von Klitzing constant a few slides

ahead.

Viscosities of light

$$\nu_\lambda = \frac{\varkappa_\lambda}{c} = R_\lambda c, \quad \eta_\lambda = \rho R_\lambda c = \frac{\gamma_\lambda}{c}$$

light.kinematicViscosity = light.radius*aether.speedOfLight

7.2738950933513 00e-4 m^2*s^-1

light.dynamicViscosity = aether.density*light.kinematicViscosity

1.298018361177988e+13 k^1*m^-1*s^-1

For those who are interested in dynamics and kinematics, these values are the kinematic and dynamic viscosities of light.

For anyone who may be unfamiliar with kinematic viscosity, it is a fluid's internal resistance to flow under gravitational forces.

I'll be using exclusively the kinematic viscosity of light in future equations.

The kinematic viscosity of light is its gravitational parameter divided by the speed of light, which reduces to its luminiferous radius times the speed of light.

Pay close attention during the next few slides to understand how the kinematic viscosity of light influences very well-known physical constants.

Planck constant

$$h = m_E \nu_\lambda = m_E c R_\lambda$$

```
aether.electronMass*light.kinematicViscosity
(aether.electronMass*aether.speedOfLight*light.radius)

aether: = 6.626070149999185e-34 k^1*m^2*s^-1
                    ↕ (match until 9th digit)
NIST:   = 6.62607015(exact)e-34 k^1*m^2*s^-1
```

What we commonly call the “Planck constant” is actually the mass of an electron times the kinematic viscosity of light.

In other words, the Planck constant is the momentum of an electron times the luminiferous radius of light.

To put that another way, so-called quantum levels are actually the momentum of a single electron oscillating at the luminiferous radius of light.

The green digits indicate the null hypothesis is false and should be rejected.

As usual, the blue digits represent a match well beyond my goal.

The Planck constant represents the **physical resistance** of light to electron flow.

Von Klitzing constant

$$R_K = \left(\frac{\mathrm{kg}\cdot\mathrm{m}}{10^7\mathrm{C}^2}\right)\left(\frac{R_\lambda c}{R_P}\right)$$

```
aether.electronMass*light.kinematicViscosity/q^2
(aether.planckConstant/q^2)

aether: = 2.581280746236914e+4 C^-2*k^1*m^2*s^-1
                    ↕ (match until 10th digit)
NIST:   = 2.5812807455(exact)e4 C^-2*k^1*m^2*s^-1
```

What we commonly call the “von Klitzing constant” is actually the Planck constant divided by q^2 to express the electron’s physical resistance ($kg*m^2/s$) as “electrical resistance” in ohms.

In other words, electrical resistance is physical resistance per elementary charge squared.

The green digits indicate the null hypothesis is false and should be rejected.

The red digits represent the deviation of the aether value for this constant from the NIST value.

I suspect that deviation results from a serious problem that has overtaken the physics community, as exemplified by this abstract from volume 54 issue 3 of Physics Today: **“The best values of the fundamental constants can rarely be determined by a direct measurement. Instead, they are usually found at the end of a chain of experimental observations and theoretical relationships”** (https://doi.org/10.1063/1.1366065).

Bohr magneton

$$\mu_B = \frac{q\,\nu_\lambda}{4\pi} = \frac{q\,c\,R_\lambda}{4\pi}$$

```
light.kinematicViscosity*q/4π

(light.radius*aether.speedOfLight*q/4π)


aether: = 9.2740100651857 74e-24 C^1*m^2*s^-1
                          ↕ (match until 11th digit)
NIST:   = 9.2740100657(29)e-24 C^1*m^2*s^-1
```

What we commonly call the “Bohr magneton” is actually the kinematic viscosity of light times the elementary charge divided by 4π.

In other words, the “Bohr magneton” is actually the kinematic viscosity of light converted into Joules per Tesla.

The green digits indicate the null hypothesis is false and should be rejected.

Bohr radius

$$a_0 = \frac{1}{R_P}\left(\frac{R_\lambda}{2\pi}\right)^2$$

```
(light.radius/2π)^2/proton.radius

aether: = 5.2917721053660 14e-11 m^1
                        ↕ (match until 11th digit)
NIST:   = 5.2917721054 4(82)e-11 m^1
```

What we commonly call the “Bohr radius” is actually the quantity (luminiferous radius of light over 2π) squared divided by the luminiferous radius of the proton.

For this constant, there is a slight discrepancy starting at the 11th digit that is well within NIST’s stated accuracy.

The green digits indicate the null hypothesis is false and should be rejected.

Fine structure constant

$$\alpha = \frac{v_0}{c} = \frac{2\pi\gamma_P}{\gamma_\lambda} = \frac{2\pi R_P}{R_\lambda}$$

`2π*proton.surfaceTension/light.surfaceTension`

`(2π*proton.radius/light.radius)`

`aether: = 7.297352564438875e-3`

`↕ (match until 10th digit)`

`NIST:   = 7.2973525693(11)e-3`

What we commonly call the “fine structure constant” is actually the velocity of an electron in orbit at the Bohr radius divided by the speed of light.

After refactoring and eliminating common terms, those velocities reduce to the circumference of a proton divided by the luminiferous radius of light.

The red digits represent the deviation of the aether value for this constant that exceed NIST’s stated accuracy.

This is another case where I suspect this deviation results from NIST adjusting measured values to conform to erroneous theories.

The green digits indicate the null hypothesis is false and should be rejected.

Electron mass

$$m_E = \rho \S R_E^3$$

```
aether.density*electron.volume


aether: = 9.1093837139000054e-31 k^1
                        ↕ (match until 12th digit)
NIST:   = 9.109383713928(28)e-31 k^1
```

What we commonly call the “electron mass” is actually the density of the aether times the volume of the electron.

The green digits indicate the null hypothesis is false and should be rejected.

Proton mass

$$m_P = \rho \S R_P^3$$

```
aether.density*proton.volume


aether: = 1.67262192595000 09e-27 k^1
                          ↕ (match until 13th digit)
NIST:   = 1.67262192595(52)e-27 k^1
```

What we commonly call the “proton mass” is actually the density of the aether times the volume of the proton.

The green digits indicate the null hypothesis is false and should be rejected.

Hartree energy

$$E_h = \frac{m_E \varkappa_P}{a_0} = P\S R_E^3 \left(\frac{2\pi R_P}{R_\lambda}\right)^2$$

```
aether.electronMass*proton.gravParm/aether.bohrRadius


aether: = 4.3597447223248 61e-18 k^1*m^2*s^-2
                          ↕ (match until 11th digit)
NIST:   = 4.3597447220 60(48)e-18 k^1*m^2*s^-2
```

What we commonly call the “Hartree energy” is actually the mass of an electron times the gravitational parameter of a proton divided by the Bohr radius.

This value determined by the aether exceeds the stated uncertainty of the NIST measured value, as identified by the red digits.

The green digits indicate the null hypothesis is false and should be rejected.

I only recently discovered that, for this particular discrepancy, NIST definitely modified their measured value by applying complex theoretical calculations to account for small corrections due to relativistic effects and other quantum mechanical factors.

In other words, this discrepancy exists because NIST modified its measured value to conform to widely accepted erroneous theories.

That point is particularly relevant when debating globers about “Airy’s Success” because the “relativity” they invoke to transform success into failure is now infecting NIST and motivating them to intentionally manipulate measurements.

It is fraudulent plus the height of folly to manipulate actual measurements to conform to popular theories no matter how accurate those theories may seem to be,

but that is exactly what our government has been doing.

Atomic unit of force

$$F_E = \frac{m_E \varkappa_P}{a_0^2} = P\S R_E^3 R_P^3 \left(\frac{2\pi}{R_\lambda}\right)^4$$

(formerly known as electrostatic force)

```
aether.hartreeEnergy/aether.bohrRadius


aether: = 8.2387235041810 49e-8 k^1*m^1*s^-2
                          ↕ (match until 10th digit)
NIST:   = 8.2387235038(13)e-8 k^1*m^1*s^-2
```

What we commonly call the “electrostatic force” is actually the Hartree energy divided by the Bohr radius.

The discrepancy for the aether value of this constant is well within NIST’s stated accuracy.

The green digits indicate the null hypothesis is false and should be rejected.

Vacuum impedance

$$Z_0 = \frac{4\pi m_E \nu_P}{q^2} = \frac{4\pi m_E c R_P}{q^2}$$

```
aether.electronMass*proton.kinematicViscosity/(q^2/4π)

aether: = 3.767303134617729e+2 C^-2*k^1*m^2*s^-1
                      ↕ (match until 11th digit)
NIST:   = 3.76730313412(59)e2 C^-2*k^1*m^2*s^-1
```

What we call the “characteristic impedance of vacuum” is the mass of an electron times the kinematic viscosity of a proton.

Note that division by $q^2/4\pi$ expresses that physical (kg*m^2/s) impedance as “electrical” ohms.

The discrepancy for the aether value of this constant is within NIST’s stated accuracy.

The green digits indicate the null hypothesis is false and should be rejected.

Vacuum permeability

$$\mu_0 = \frac{4\pi \text{ kg m}}{10^7 \text{C}^2} = \frac{4\pi\ m_E R_P}{q^2}$$

`4π/aether.cgs2mks`

```
aether: = 1.256637061435917e-6 C^-2*k^1*m^1
                      ↕ (match until 10th digit)
NIST:   = 1.25663706212(19)e-6 C^-2*k^1*m^1
```

What we commonly call the “vacuum permeability” reduces to 4π divided by the cgs-to-mks conversion factor.

Compare this to the elementary charge if that doesn’t make sense!

The red digits represent the deviation of the aether value for this constant that exceeds NIST’s stated accuracy.

The green digits indicate the null hypothesis is false and should be rejected.

Vacuum permittivity

$$\varepsilon_0 = \frac{q^2}{4\pi\, m_E c^2 R_P} = \frac{q^2}{4\pi\, m_E \varkappa_P}$$

`q^2/(4π*aether.pressure*electron.volume*proton.radius)`

`aether: = 8.854187817603 39e-12 C^2*k^-1*m^-3*s^2`

`↕ (match until 10th digit)`

`NIST: = 8.854187812 8(13)e-12 C^2*k^-1*m^-3*s^2`

What we commonly call the “vacuum permittivity” is actually the reciprocal of the electron mass times the gravitational parameter of a proton.

That is then multiplied by q^2 over 4π to convert is into electrical units.

The red digits represent the deviation of the aether value for this constant that exceeds NIST’s stated accuracy.

The green digits indicate the null hypothesis is false and should be rejected.

Grand unification!

$$\varkappa_{Earth} = \frac{PR_{Earth}}{\rho}, \quad g = \frac{\varkappa_{Earth}}{r^2} \approx 9.8 \text{ m/s}$$

$\varkappa_{Earth}$ = 3.986004418 x 10^{14} m^3/s^2

Let's take a brief pause now that it has become obvious the luminiferous aether is responsible for electromagnetism.

If you didn't recognize this before now, the luminiferous aether achieves the holy grail of physics by unifying gravity with the other fundamental forces.

That is a logical deduction, based upon the fact electromagnetism was previously unified with the other forces.

The gravitational parameter of the Earth is known so accurately because it is crucial for calculations related to orbital mechanics, especially when dealing with satellites orbiting Earth.

The gravitational parameter of the Earth implies the black hole within the Earth has a luminiferous radius of 4.435 mm.

That means external aether is essentially flowing perpendicular to the surface of the Earth as it drains into that black hole.

Thus, very bad assumptions caused the Michelson-Morley experiment to fail so badly.

That is why a good null hypothesis is so important to focus you on what you are trying to refute.

In many ways, Michelson & Morley were essentially riding in a boxcar of the train while trying to measure the Doppler shift of its whistle.

Magnetic flux quantum

$$\Phi_B = \frac{h}{2q} = \frac{m_E \nu_\lambda}{2q}$$

```
aether.electronMass*light.kinematicViscosity/(2q)
aether.planckConstant/(2q)

aether: = 2.0678338485845 54e-15 C^-1*k^1*m^2*s^-1
                          ↕ (match until 11th digit)
NIST:   = 2.0678338488(exact)e-15 C^-1*k^1*m^2*s^-1
```

What we commonly call the “magnetic flux quantum” is actually the mass of an electron times the kinematic viscosity of light divided by two times the elementary charge.

The red digits represent the deviation of the aether value for this constant that exceeds NIST’s stated accuracy.

The green digits indicate the null hypothesis is false and should be rejected.

Josephson constant

$$K_J = \frac{2q}{h} = \frac{2q}{m_E \nu_\lambda}$$

```
2q/aether.planckConstant
```

```
2q/(aether.electronMass*light.kinematicViscosity)
```

```
aether: = 4.835978483883058e+14 C^1*k^-1*m^-2*s^1
                      ↕ (match until 10th digit)
NIST:   = 4.8359784844(exact)e14 C^1*k^-1*m^-2*s^1
```

What we commonly call the “Josephson constant” is actually two times the elementary charge divided by the Planck constant.

The red digits represent the deviation of the aether value for this constant that exceeds NIST’s stated accuracy.

The green digits indicate the null hypothesis is false and should be rejected.

Rydberg constant

$$R_\infty = \frac{R_P}{2a_0 R_\lambda}$$

```
proton.radius/(2*aether.bohrRadius*light.radius)


aether: = 1.0973731568 45759e+7 m^-1
                        ↕ (match until 12th digit)
NIST:   = 1.0973731568157(12)e7 m^-1
```

What we commonly call the “Rydberg constant” is actually the radius of a proton divided by the quantity two times the Bohr radius times the luminiferous radius of light.

The red digits represent the deviation of the aether value for this constant that exceeds NIST’s stated accuracy.

The green digits indicate the null hypothesis is false and should be rejected.

Mind blown

The null hypothesis is false and must be rejected to beyond a 6σ level of confidence.

In other words, the luminiferous aether does produce the fundamental constants of physics to a level of confidence that exceeds 6σ.

Moreover, the luminiferous aether unifies gravity with the other "fundamental forces" of physics.

In addition, relativistic corrections are not required and appear to corrupt the measured data whenever they are applied,

thereby casting extreme doubt on the theories of relativity and everything based on those theories.

A suggestion for debating globers…

Let “Flat Earth” be H_0

Ask them to demonstrate “curvature of the Earth” to reject H_0

Demand actual measurements…

…not distorted photos

…not theories

Challenge any false claims by focusing on H_0

Here is a suggestion for debates with globers:

Let Flat Earth be the null hypothesis.

Ask them to use “curvature of the Earth” measurements to reject the null hypothesis.

Demand actual measurements - not distorted photos, not theories!

Can they produce sufficient evidence to reject the null hypothesis?

Challenge their false claims by focusing on rejecting the null hypothesis.

More suggestions…

Don’t feel like you need to reject a “globe Earth” H_0

But if you do, be aware of…

- …dam/lake measurements
- …bottom-up resolution loss
- …extremely high-altitude balloon videos

Don’t feel like you need to reject a “globe Earth” H_0

But if you do, be aware of…

…dam/lake measurements

…bottom-up resolution loss

…extremely high-altitude balloon videos

The nice thing about extremely high-altitude balloon videos is that the wobble exposes any optical distortion above or below the flat horizon.

The Final Experiment?

Is it really final?

Is it ever wise to stop seeking the truth?

What unknowns remain to be discovered?

What did the sponsor fail to consider?

Is “The Final Experiment” really final?

Is it ever wise to stop seeking the truth because you think you found the answer?

What unknowns remain to be discovered?

Ask yourself “What did the sponsor fail to consider?”

Sadly, absence of a 24-hour sun was a theory promoted by many people, and the sponsor wants to focus on that.

It is best to dismiss all strawman assertions and refocus on rejecting the null hypothesis.

If you can’t resist debating globers about the 24-hour sun,

my recommendation is use H_0 = “24-hour sun is not possible on a flat Earth.”

Then select your most confident way to falsify H_0, such as:

1) Reject H_0 because there was a 24-hour sun and the Earth is flat as demonstrated by curvature measurements, or

2) Reject H_0 because actual observations match flat earth azimuth and elevation

predictions.

It is up to each of us to determine what level of confidence is acceptable, but I would suggest at least 2-3σ (about 95-99%).

AI

Q: Is the Earth flat or round?

Q: How do flat Earthers explain sun synchronous orbits?

Q: Is there evidence for a spherical Earth?

Q: Is there evidence for a flat Earth?

Artificial Ignorance has generally demonstrated its inability to think rationally.

The one thing at which AI seems to truly excel is telling you the mainstream talking points for anything you ask.

Use that to your advantage by asking questions and dealing first with the answers that are most difficult to refute.

Finally, don’t let your heart be troubled about anything of which you are uncertain!

Are there any questions?

Q & A

Are there any questions?