Toby's Flat Earth Presentation Mar 2 2024

Three Globe Claims

- Motion

- Curvature

- Geophysics

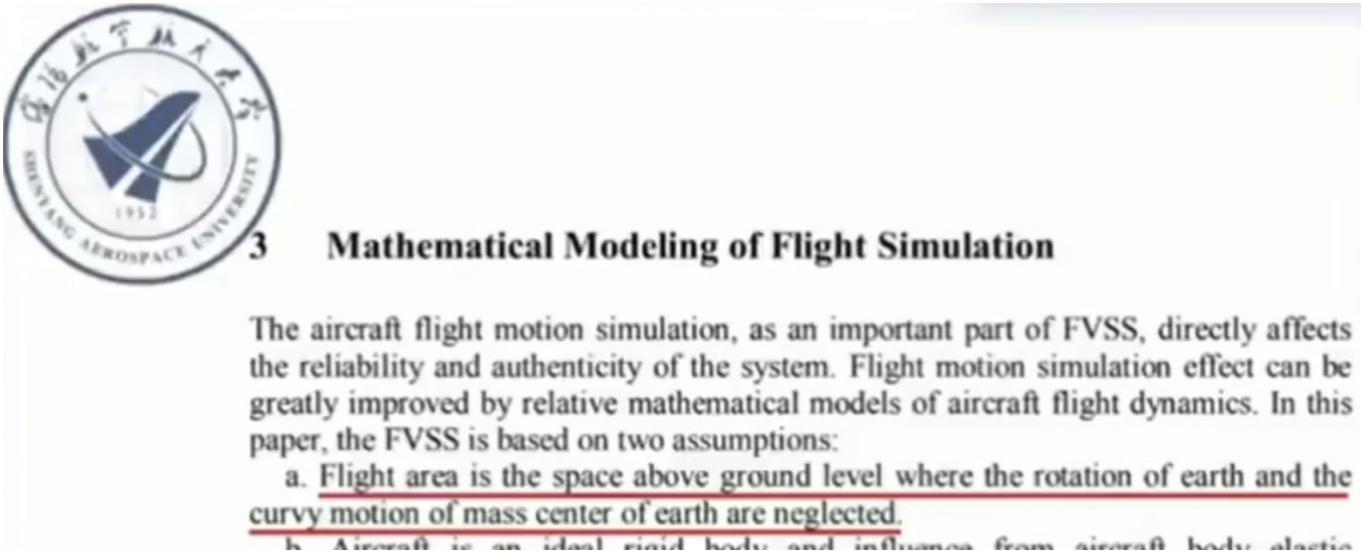
The Paradoxical Globe

- Particle/Wave Duality
- The Twin Paradox
- Ehrenfest Paradox
- Einstein-Podalsky-Rosen Paradox
- Shrodinger's Cat
- Heisenberg Uncertainty
- Neumann-Seliger Gravitational Paradox
- The Information Paradox
- Newton's Shell Theorem Violation
- Maximum Momentum/Minimum Energy Rotation Violation
- Curved Visual Space Violation
- ...and many more!

Motion

- We *feel* no motion
- All flight on Earth utilizes a stationary baseline
  - Planes
  - Missiles
  - Helicopters

Commercial Flight Simulation



3 Mathematical Modeling of Flight Simulation

The aircraft flight motion simulation, as an important part of FVSS, directly affects the reliability and authenticity of the system. Flight motion simulation effect can be greatly improved by relative mathematical models of aircraft flight dynamics. In this paper, the FVSS is based on two assumptions:

a. Flight area is the space above ground level where the rotation of earth and the curvy motion of mass center of earth are neglected.

Dynamic Positioning Equations of Motion

The DPS equations of motion use four assumptions that simplify the program while maintaining its fidelity for most maneuvers and applications: point-mass modeling, nonturbulent atmosphere, zero side forces, and a nonrotating Earth. The primary advantages of using the DPS over a piloted real-time simulator are that it is much easier to modify the aerodynamic and propulsion data tables, and the DPS easily allows back-to-back comparisons of vehicle performance using a maneuver flown exactly the same in each case despite a varying vehicle configuration. Also, the DPS computes aircraft performance in compressed time, allowing much faster viewing of the results than if the maneuvers were flown in real-time on a piloted simulator.

Helicopter Equations of Motion

Equations of Motion

The helicopter equations of motion are given in body axes with respect to a flat, nonrotating Earth. The helicopter is considered a rigid body with mass symmetry about the $x_h - z_h$ plane. The effects due to the engine angular momentum are neglected.

Translational acceleration- The translational equations of motion are

$$C_{h/e}\begin{bmatrix}0\\0\\mg\end{bmatrix}+\begin{bmatrix}X\\Y\\Z\end{bmatrix}_{f,\,h}+\begin{bmatrix}X\\Y\\Z\end{bmatrix}_{r,\,h}=m\left(\begin{bmatrix}\dot{u}\\\dot{v}\\\dot{w}\end{bmatrix}_{cg,\,h}+\begin{bmatrix}0&-r&q\\r&0&-p\\-q&p&0\end{bmatrix}_{h}\begin{bmatrix}u\\v\\w\end{bmatrix}_{cg,\,h}\right) \tag{45}$$

where

$$C_{h/e}=\begin{bmatrix}\cos\theta\cos\psi & \cos\theta\sin\psi & -\sin\theta\\ \sin\phi\sin\theta\cos\psi - \cos\phi\sin\psi & \cos\phi\cos\psi + \sin\phi\sin\theta\sin\psi & \sin\phi\cos\theta\\ \cos\phi\sin\theta\cos\psi + \sin\phi\sin\psi & \cos\phi\sin\theta\sin\psi - \sin\phi\cos\psi & \cos\phi\cos\theta\end{bmatrix}_{h} \tag{46}$$

Question:

If pilots have to treat the Earth as stationary, and we can't perceive any motion, is there *any* way we can measure it?

Answer:

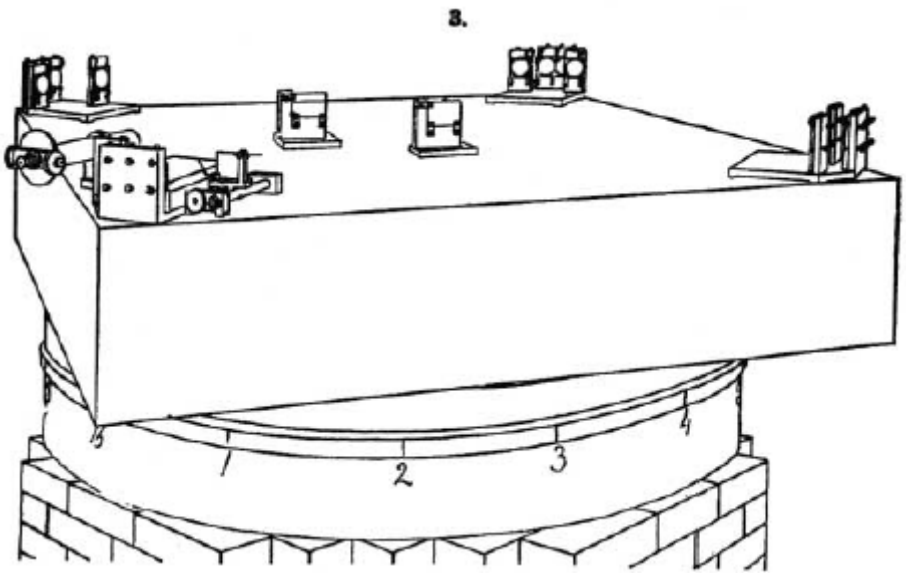
Yes, using the induction rate of light, we can measure absolute velocity, as understood since at least 1818.

1865 JC Maxwell

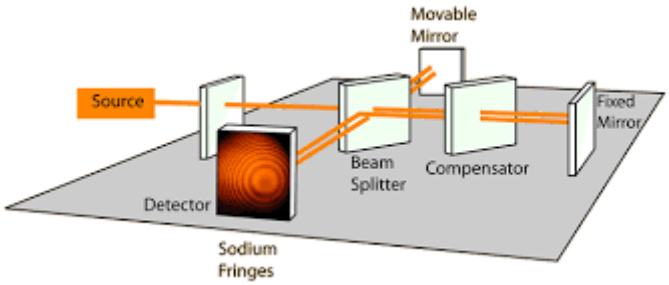
- Worked upon Faraday's experiments
- Used known values of the electric constant (ε_0) and the magnetic constant (μ_0) in his electromagnetic wave equations
- Light behaves as an electromagnetic wave, which requires a substantive medium, aka the aether

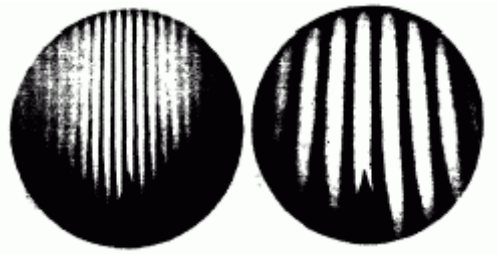
$$c = \frac{1}{\sqrt{\varepsilon_0 \mu_0}}$$

Michelson-Morley 1887



Interferometry





- Used an interferometer to detect the absolute motion of the Earth

- Should have measured the orbital motion of the Earth around the Sun
- Based on the premise of a substantive medium, necessary for electromagnetic waves propagation
- Dependent Variable: “c” or the “speed of light”
- Independent Variable: Orthogonal Vector Direction
- Result != Copernican Principal
- No orbital motion was detected, though a small fringe was registered
- But the result can be explained with a stationary Earth and an aether wind

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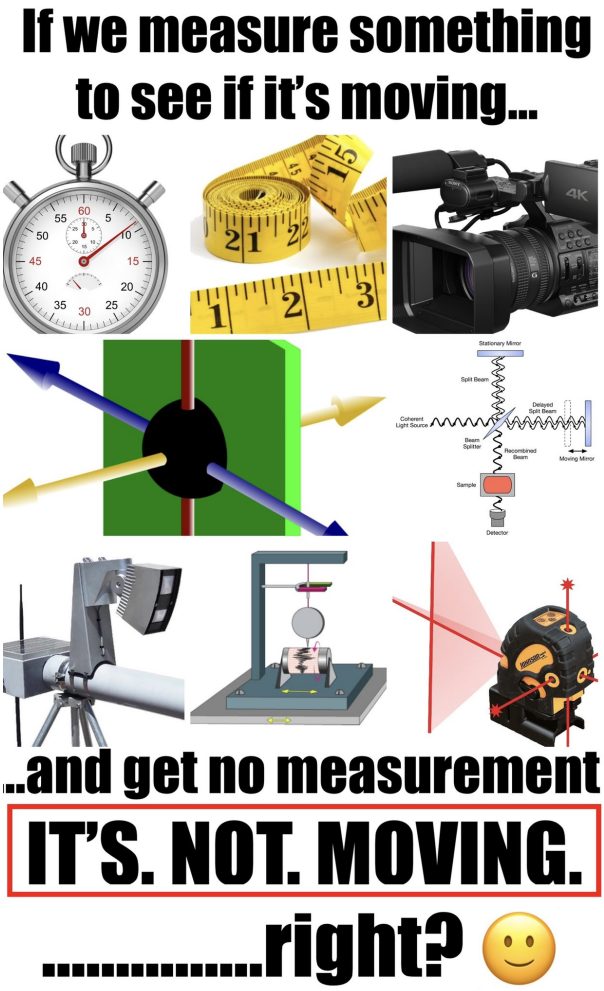


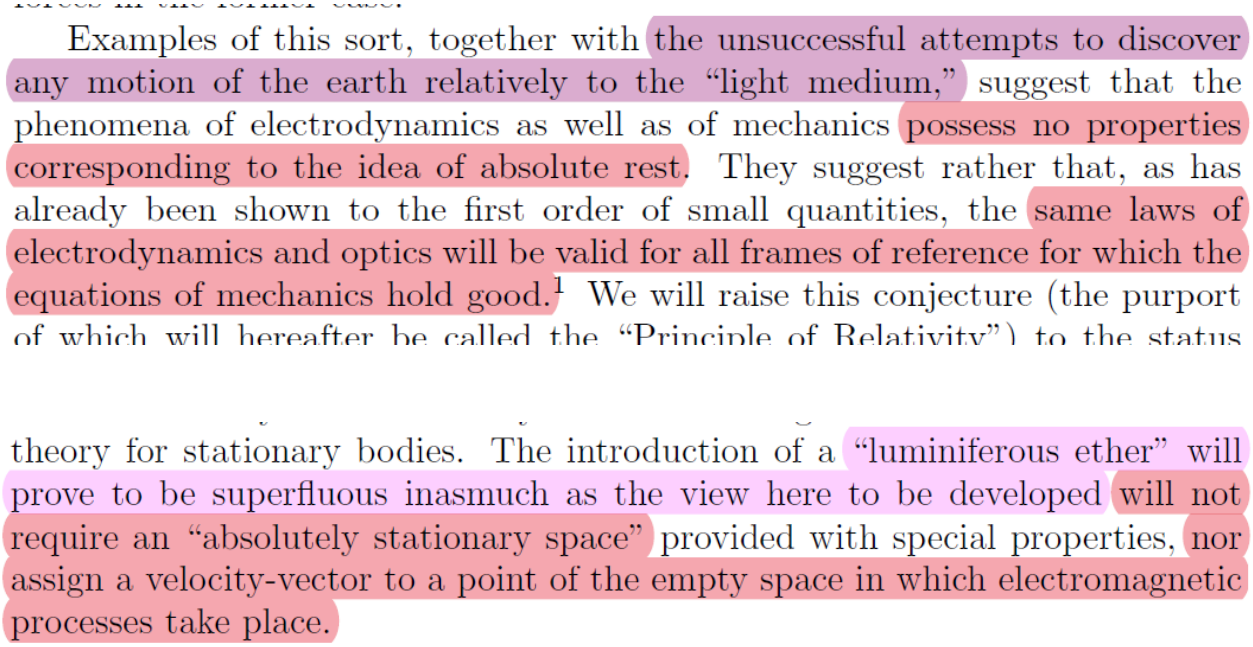
...Enter Einstein!

ON THE ELECTRODYNAMICS OF MOVING BODIES

By A. EINSTEIN

June 30, 1905

- No aether
- One-way "speed of light" is *always* constant
- No invoking absolute space or absolute time



Examples of this sort, together with the unsuccessful attempts to discover any motion of the earth relatively to the "light medium," suggest that the phenomena of electrodynamics as well as of mechanics possess no properties corresponding to the idea of absolute rest. They suggest rather that, as has already been shown to the first order of small quantities, the same laws of electrodynamics and optics will be valid for all frames of reference for which the equations of mechanics hold good.[1] We will raise this conjecture (the purport of which will hereafter be called the "Principle of Relativity") to the status

theory for stationary bodies. The introduction of a "luminiferous ether" will prove to be superfluous inasmuch as the view here to be developed will not require an "absolutely stationary space" provided with special properties, nor assign a velocity-vector to a point of the empty space in which electromagnetic processes take place.

"Imaginary physical experiments" and the lack of measurable motion used as the sole "experimentation" from which Einstein derives Special Relativity.

1. If the clock at B synchronizes with the clock at A, the clock at A synchronizes with the clock at B.

2. If the clock at A synchronizes with the clock at B and also with the clock at C, the clocks at B and C also synchronize with each other.

Thus with the help of certain imaginary physical experiments we have settled what is to be understood by synchronous stationary clocks located at different places, and have evidently obtained a definition of "simultaneous," or "synchronous," and of "time." The "time" of an event is that which is given simultaneously with the event by a stationary clock located at the place of the event, this clock being synchronous, and indeed synchronous for all time determinations, with a specified stationary clock.

In agreement with experience we further assume the quantity

what?!

$$\frac{2AB}{t'_A - t_A} = c,$$

to be a universal constant—the velocity of light in empty space.

.9c + .9c < c

aka

2 + 2 does not equal 4

$$V = \frac{v + w}{1 + vw/c^2}.$$

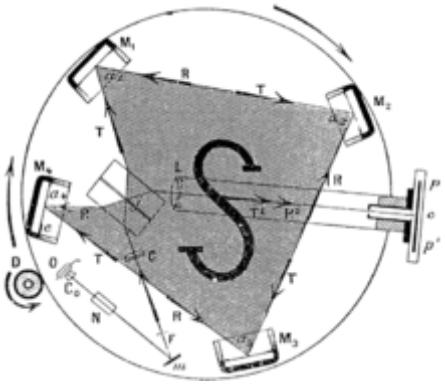
It follows from this equation that from a composition of two velocities which are less than c, there always results a velocity less than c. For if we set $v = c - \kappa, w = c - \lambda$, κ and λ being positive and less than c, then

$$V = c\frac{2c - \kappa - \lambda}{2c - \kappa - \lambda + \kappa\lambda/c} < c.$$

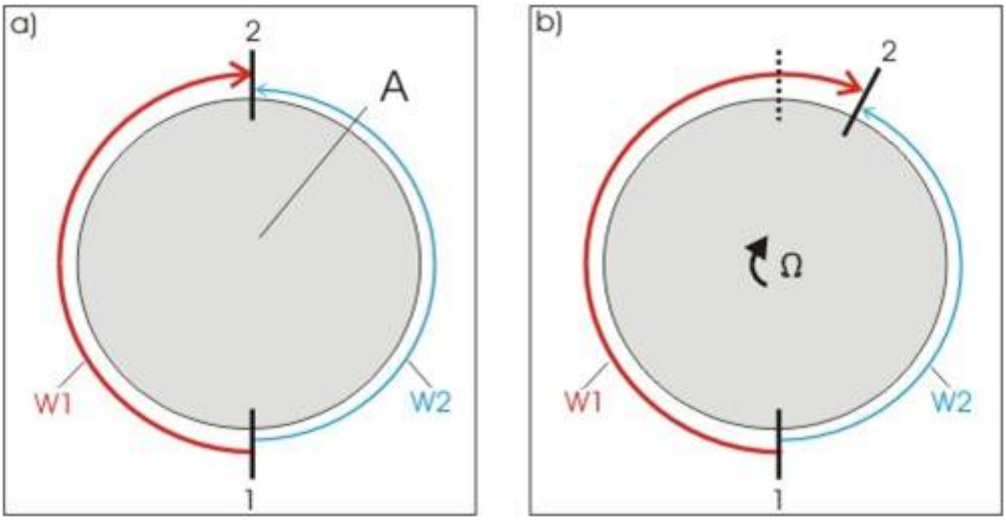
It follows, further, that the velocity of light c cannot be altered by composition with a velocity less than that of light. For this case we obtain

$$V = \frac{c + w}{1 + w/c} = c.$$

Sagnac 1913



=> "Speed of Light" = c +|- v



*Violates SR (Special Relativity)

Dayton Miller 1920's

- There is a preferred direction of the "speed of light"
- There is also a periodicity of this effect
- "Aether flow" matches the motion of the sky
- Measurement is greater at altitude
- Related to the **motion of the solar system

kilometers per second. The direction of the indicated motion is fixed with relation to sidereal time; that is, it is towards a fixed point in space, as of a motion of the solar system towards the point having a right ascension of seventeen hours, and a declination of 68 degrees north. Ether drift produces an effect as observed in the interferometer which is proportional to the square of the ratio of the velocity of the cosmic motion of the earth and the velocity of light; this is a "second order" effect, and is periodic in each half revolution of the interferometer. The complete theory of this experiment shows that there is necessarily also present a "first order" effect periodic in each full turn of the interferometer; this has never

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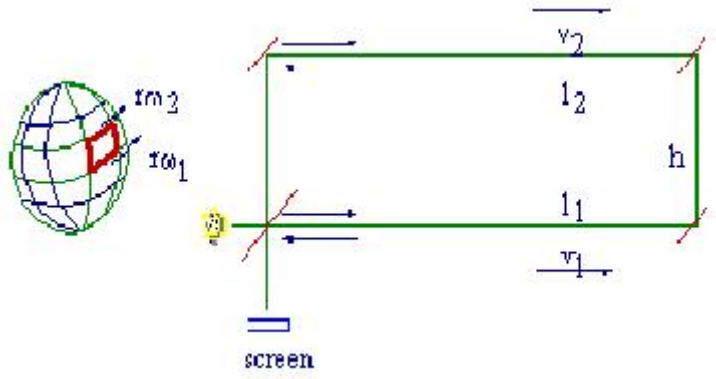
Michelson-Gale-Pearson 1925



- They claim to have measured the rotation of the earth
- Based on the anisotropic propagation of light
- Claim is they can only measure "rotational motion"
- Linear motion is "undetectable"
- "Closed loop"

Galaev 2001

ETHERAL WIND IN EXPERIENCE OF MILLIMETRIC RADIOWAVES PROPAGATION

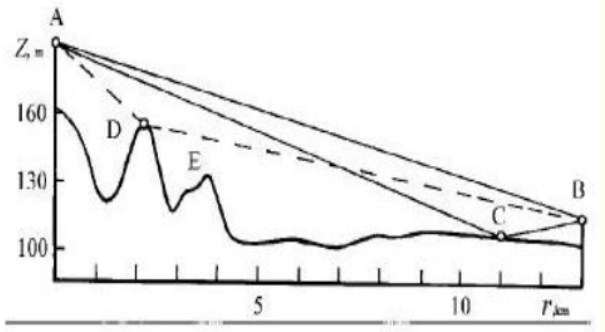
Yu.M. Galaev[1]

The Institute of Radiophysics and Electronics of NSA in Ukraine,
12 Ac. Proskury St., Kharkov, 61085 Ukraine

Received August 26, 2001

The phase method of anisotropic media parameters measurement of electromagnetic waves propagation is proposed. The experimental hypothesis check about the existence of such material medium of a radiowaves propagation in the nature, as Aether is executed in eight millimeter radiowaves range. The ethereal wind speed and this speed vertical gradient near the Eath's surface have been measured. The systematic measurement results do not contradict the initial hypothesis rules and can be considered, as experimental imagination confirmation about the Aether existence, as material medium, in the nature.

In 1925 D.K. Miller received the optical path of the length about 64 m with a cross-shaped interferometer, as a result of long systematic measurements, that the suspected ethereal wind speed at the altitude 265 m above the sea level (Clevelend) has the value about 3 km/s, and at the altitude 1830 m (observatory Mount Wilson, Pasadena) is about 10 km/s. The motion apex coordinates of the Solar system were determined: the direct ascension 17.5^h, declination $+65^0$ [5].



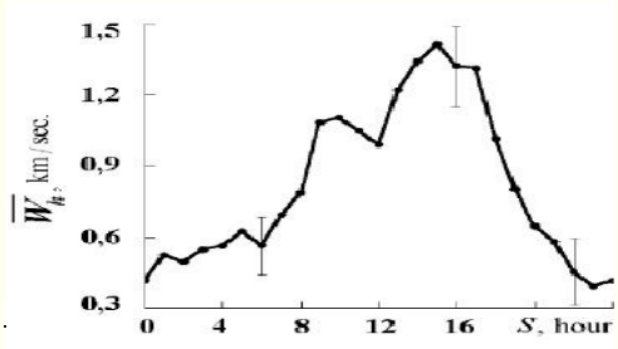


Table 2: Dependence of the ether drift velocity on the height above the Earth's surface

	The ether drift velocity (m/sec)			
Height above the Earth's surface (meters)	This work 2001-2002 Optics	The experiment [13] 1998-1999 Radio waves band	The experiment [79] 1925-1926 Optics	The experiment [10] 1929 Optics
1830	–	–	10000	6000
265	–	–	3000	–
42	–	1414	–	–
4.75	435	–	–	–
1.6	205	–	–	–

Generalized Sagnac Effect

- Date: Sep, 2004
- Author(s): Ruyong Wang, Yi Zheng, Aiping Yao
- Institution: St. Cloud State University - St. Cloud, Minnesota

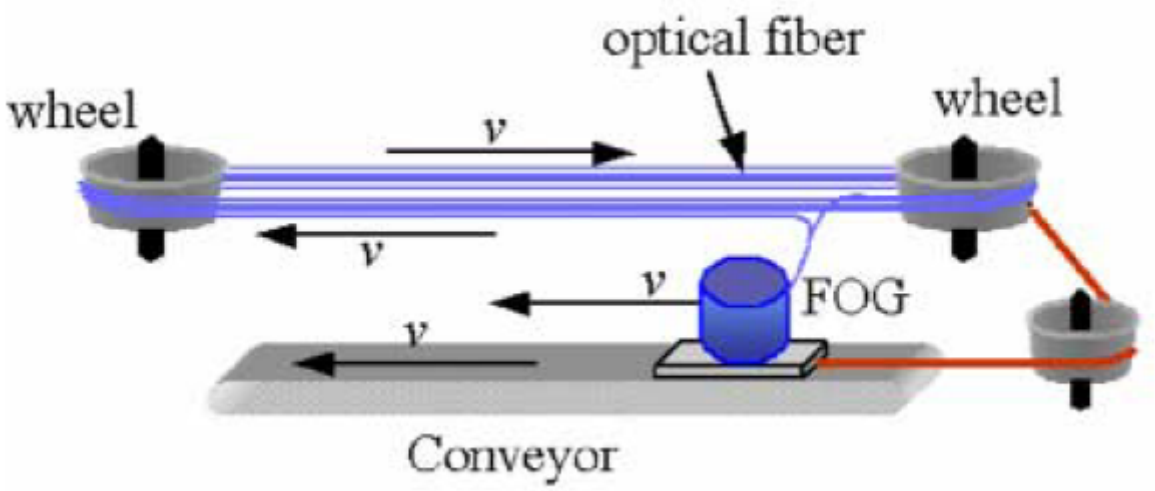
> Belief that the Sagnac test of 1913 only applied to rotational motion was discounted when Ruyong Wang found the same results for linear motion in 2004. The Sagnac result has never been credibly explained, despite its wide application in modern technology. In turn the Wang paper has been virtually ignored in the last ten years [...]
> Analysis of Wang's result in the conveyor and lab frames with the premise of aether drag logically leads to identification of preferred motion in an absolute frame of reference [...] the earth-bound laboratory frame!

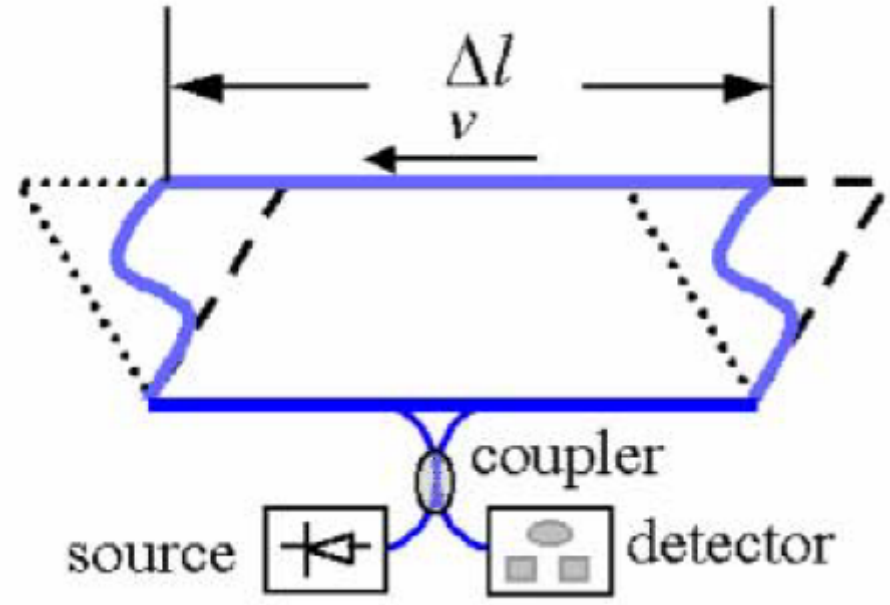
- Robert Bennett, 2014: *A Landmark Experiment: The Linear Sagnac Test of Ruyong Wang*

Generalized Sagnac Effect

Ruyong Wang, Yi Zheng, and Aiping Yao
St. Cloud State University, St. Cloud, Minnesota 56301, USA
(Received 18 March 2004; published 27 September 2004)

Experiments were conducted to study light propagation in a light waveguide loop consisting of linearly and circularly moving segments. We found that any segment of the loop contributes to the total phase difference between two counterpropagating light beams in the loop. The contribution is proportional to a product of the moving velocity $\boldsymbol{v}$ and the projection of the segment length $\Delta \boldsymbol{l}$ on the moving direction, $\Delta\phi = 4\pi \boldsymbol{v} \cdot \Delta \boldsymbol{l}/c\lambda$. It is independent of the type of motion and the refractive index of waveguides. The finding includes the Sagnac effect of rotation as a special case and suggests a new fiber optic sensor for measuring linear motion with nanoscale sensitivity.





rotation as a special case. The finding also suggests a new fiber optic linear motion sensor having nanoscale sensitivity, which is much more sensitive than any existing linear motion detectors. This linear motion sensor may be

(12) **United States Patent**
Wang et al.

(54) **STAND-ALONE SPEEDOMETER USING TWO SPACED LASER BEAMS**

(76) Inventors: **Ruyong Wang**, 917 21st St. SE., St. Cloud, MN (US) 56304; **Yi Zheng**, 1605 Grizzly La., Sartell, MN (US) 56377; **Aiping Yao**, 2725 Edward Dr., St. Cloud, MN (US) 56301

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 448 days.

(21) Appl. No.: **11/035,659**

(22) Filed: **Jan. 14, 2005**

Related U.S. Application Data

(60) Provisional application No. 60/536,410, filed on Jan. 14, 2004.

(51) **Int. Cl.**
G01P 3/36 (2006.01)
G01C 19/72 (2006.01)

(52) **U.S. Cl.** **356/28.5**; 356/460; 356/482

(58) **Field of Classification Search** 356/28, 356/28.5, 459, 460, 477, 482
See application file for complete search history.

The Allais Effect and the Anisotropy of Space

- Solar eclipse of 1954

- Nobel laureate Maurice Allais observed anomalous behavior of his pendulum
- Effect was named “The Allais Effect”
- Observed it again in 1956 and 1959

Maurice Allais, 1997: The Anisotropy of Space: The necessary revision of certain postulates of contemporary theories

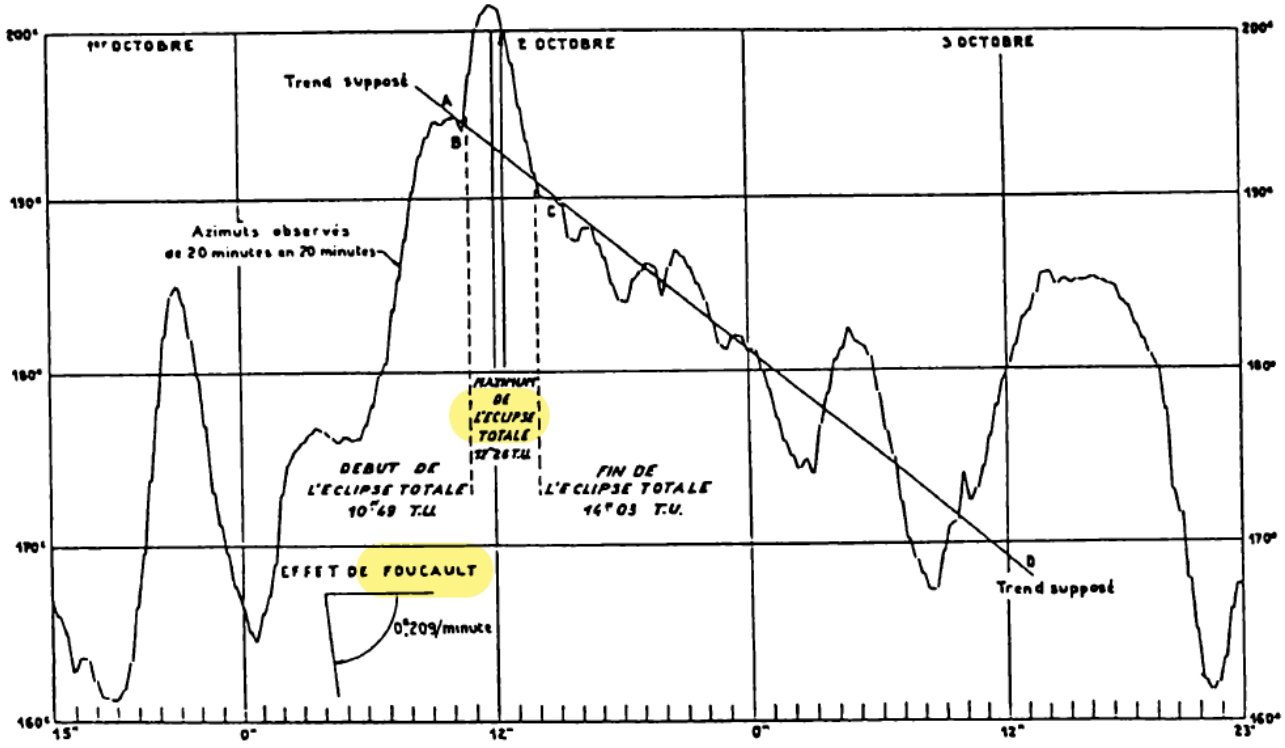
This book is dedicated to :

- To all those who do not consider today's "well-established truths" to be intangible, and who do not have blind faith in their durability,

---

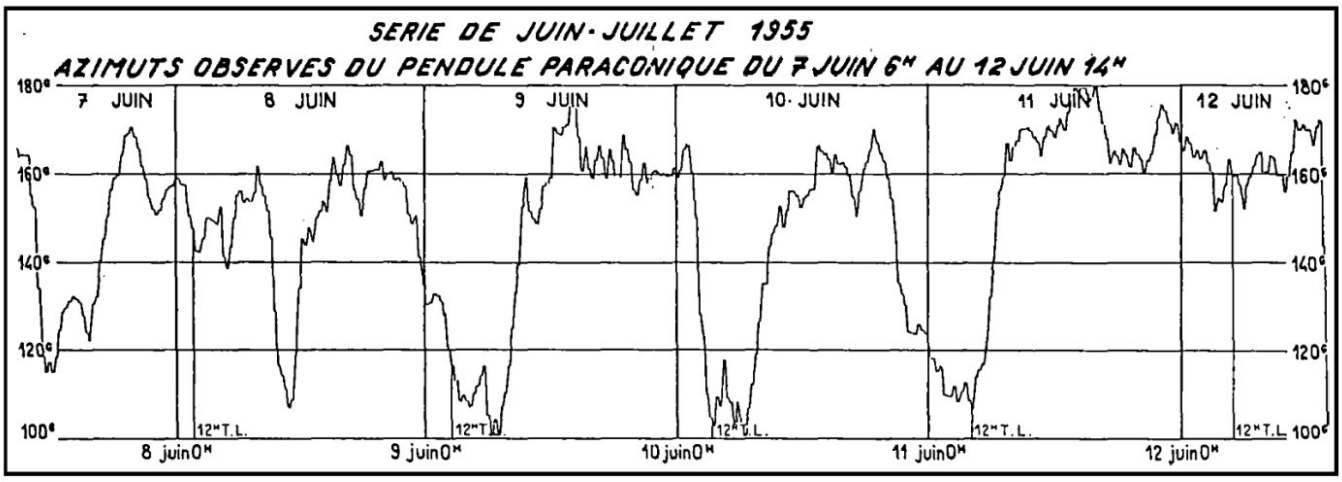
Graphique XXXI

ECLIPSE TOTALE DE SOLEIL DU 2 OCTOBRE 1959
AZIMUTS OBSERVES DU PENDULE PARACONIQUE
DU 1er OCTOBRE 15h AU 3 OCTOBRE 23h



(2) Since these anomalies are totally *inexplicable in the context of In théorie currently admired by* i *grouilation.*

(3) In fact, the anomalies observed were confirmed by experiments by Saxl and Allen during the solar eclipse of March 7, 1970 *i1970, isolate Eclipse ne been by a Torsion Pendulum,* Erwin J. Saxl and Mildred Allen, Physical Review, D, vol. 3, Number d, 15 February 1971). Sam and Allen's article refers expressly to my own experiments.



Légende : Angles are counted in grades from North in the direct direction.
The 100-grade azimuth corresponds 1 to the direction perpendicular to the meridian. The 200-grade azimuth corresponds to the meridian.
12h T.L.: time when the Moon crosses the meridian.

Pendulum precession rate relative to the sidereal motion of the Sun and Moon (their annual sky movements):

Graphs XXVII and XXVIII show the adjustments half-sums (B+S)/2 and half-differences (B-S)/2 of means ,*daily* azimuths B and S of the paraconic pendulum in Saint-Germain and Bougivtll dll **hr** All 31 july 1958 [1] taking into account both linear trends [2] and sinusoids with a period of 27.322 days *equal to the sidërole period of the moon !-* *.

1- To study anomalies in the movement of a short pen- dule, I mainly used a meter-long paraconic pendulum, consisting of a vertical bronze disk fixed to a bronze rod suspended from a stirrup resting on a steel ball.

In the absence of any magnetic field other than the terrestrial magnetic field, I have observed, on the basis of *continuous* observations followed for periods of the order of one month from 1954 to 1960, some *very remarkable* cir- constances, most notably the existence of a significant lunar diurnal periodicity of 24 h 50 min. of *considerably higher* amplitude than that calculated according to ac- tually accepted theories. The *observed* amplitude is about twenty or one hundred million times higher than the *calculated amplitude,* depending on whether we consider the anisotropic-suspension paraconic pendulum or the isotropic-suspension pa- raconic pendulum [1]. In fact, such a *lunar* diurnal peridic component is *completely inexplicable within the framework of currently accepted theories.*

Il convient dès lors de considérer que les lois actuelles de la gravitation ne sont en aucune façon les lois parfaitement vérifiées, définitives, et immuables [5], sur lesquelles on se fonde pour affirmer que mes résultats expérimentaux sont contraires à toute l'expérience acquise dans le domaine de l'astronomie. *Ces lois, comme toutes les lois expérimentales, ne sont vérifiées qu'avec une certaine approximation.*

Translation:

> "It is therefore appropriate to consider that the current laws of gravitation are in no way the perfectly verified, definitive, and immutable laws, on which one bases the assertion that my experimental results are contrary to all the experience

> acquired in the field of astronomy. These laws, like all experimental laws, are only verified with a certain approximation."

1970 Solar Eclipse as "Seen" by a Torsion Pendulum

ERWIN J. SAXL
Tensitron, Incorporated, Harvard, Massachusetts 01451

AND

MILDRED ALLEN
Mount Holyoke College, South Hadley, Massachusetts 01075

(Received 6 August 1970)

During the solar eclipse of 7 March 1970, readings were taken and recorded electronically of the times required for the torsion pendulum to rotate through a given fixed part of its path, involving both clockwise and counterclockwise motions, on its first swing from rest. Significant variations in these times were observed during the course of the eclipse as well as in the hours just preceding and just following the eclipse itself. Between the onset of the eclipse and its midpoint there is a steady increase in the observed times. After the midpoint the times decrease suddenly and level off promptly to values considerably greater than those observed before the eclipse. Furthermore, before the eclipse there is a periodic variation in these times. This strange periodicity was essentially repeated two weeks later at the same hours, though the actual values were somewhat greater than the earlier ones. These increases in actual values exceed by a factor of 10^5 those that can be explained by the attraction of the moon due to its change in position relative to the sun and earth. All this leads to the conclusion that classical gravitational theory needs to be modified to interpret these experimental facts.

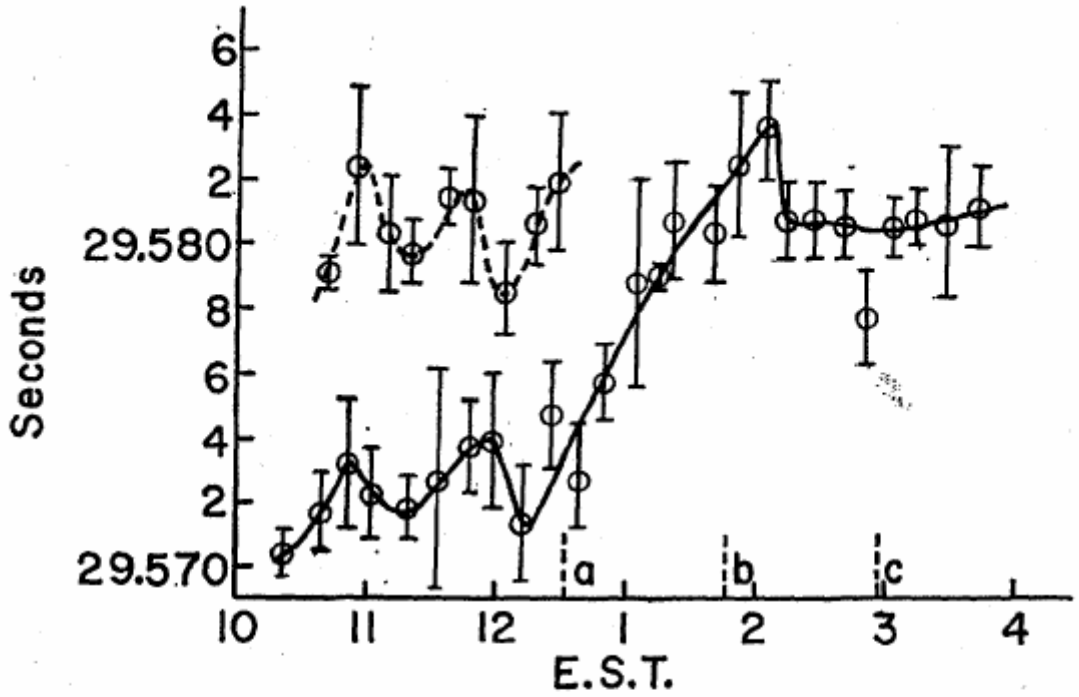


FIG. 1. Times required to traverse the fixed part of the path of oscillation (ordinates) vs the hour at which the observations were made, from about 10 a.m. until nearly 4 p.m. (abscissas). The full line shows the observations made on 7 March 1970, the day of the total eclipse. The short vertical dashed lines, *a*, *b*, and *c*, show the times of onset, midpoint, and endpoint of the eclipse. The curved dashed line shows the data taken two weeks later, 21 March, when the sun and moon were on opposite sides of the earth.

The difficulty is that this *relative* increase of about 2.7×10^{-4} recorded here would require an increase in tension of 1.2 kg, as calculated from the results of our paper on the period of a torsion pendulum[1] (see Fig. 5 therein). This is 5% of the total weight of the pendulum bob, 23.4 kg (51.5 lb), and is far greater than classical theories of gravitation can explain. Results of this order of magnitude have been consistently observed in Harvard over a period of 17 years. The greatest possible variation in g computed according to the older theories[3] for a given site on the earth's surface is 0.00016 cm/sec^2 or 1.6×10^{-5}%, so that *our results are about 10^5 times as great*. As shown in Fig. 1, the maximum average deviation of our results (which is a measure of our uncertainty) is about 2.5×10^{-2}%.

A confirmation of the Allais and Jeverdan-Rusu-Antonescu effects during the solar eclipse from 22 September 2006 , and the quantization of behaviour of pendulum

V. A. Popescu [1*], D. Olenici [2*]

[1]Dept. of Physics, University "Politehnica "of Bucharest,
Splaiul Independentei 313, 060042 Bucharest-Romania
[2]Planetariul Suceava, Str. Universității 13 A, 720229 Suceava-Romania

In loving memory of our former Proffesors
Gheorghe Jeverdan, Gheorghe Il.Rusu, Virgil Antonescu

Abstract

The experiments made with a paraconical pendulum at Suceava Planetarium (Romania) during annular solar eclipse from 22 September 2006 confirm once again the existence of the Allais effect (change of speed of rotation of plane of oscillation of a pendulum during an eclipse) and Jeverdan-Rusu-Antonescu effect (change of period of oscillation of a pendulum during an eclipse)

PHYSICAL REVIEW D **83,** 067302 (2011)

Searching the Allais effect during the total sun eclipse of 11 July 2010

Horacio R. Salva*

Centro Atómico Bariloche and Instituto Balseiro, CNEA-UNCuyo-Conicet, Av. Bustillo 9500, (8400) Bariloche, Argentina

(Received 28 December 2010; published 16 March 2011)

I have measured the precession change of the oscillation plane with an automated Foucault pendulum and found no evidence (within the measurement error) of the Allais effect. The precession speed was registered and, due the variations involved, if the precession speed would changed 0.3 degree per hour (increasing or decreasing the angle of the normal precession speed) during the all eclipse, it would be notice in this measurement.

DOI: 10.1103/PhysRevD.83.067302 PACS numbers: 95.10.Gi, 04.20.Cv, 45.50.Pk

II. THE APARATUS

The pendulum was already described in [11]. It is a 12.5 kg lead bob hanging from a fixed support with a 4.975 m piano chord. It has a feedback amplifier that keeps continuous oscillation of the pendulum at 1° amplitude. It also has an electromagnetic brake which keeps the elliptic trajectory in acceptable values (precession speed no higher than 0.1°/h). There is a following system composed of two Hall sensors, which measures continuously the position of the plane of oscillation, the minor diameter, and the sense of rotation of the ellipse. The total precession is calculated as the derivative of the precession angle vs time with the last number of oscillations. Finally, the total precession measured is corrected by the ellipse precession.

IV. CONCLUSIONS

The maximum deflection of the precession of the Foucault pendulum found in these measurements is very far from those obtained by M. Allais [1] (13°) and I. Mihaila [7,8] (1.8°) in other total sun eclipses. I saw nothing out of the noise, that is, the effect would be less than 0.3° in 1 h. We calculate the derivative of the

ctrl+f brake?

The Cause of the Allais Effect Solved

Bjarne Lorenzen

VUC, Kolding, Denmark
Email: bjarne.lorenzen@yahoo.com

Abstract

An Anisotropic Dark Flow Acceleration can solve the cause of the Allais Effect [1]. This claim is based on a kinematic analysis of 21 Allais Effect measurements. All measurements (without exception) substantiate that the Allais Effect is consistent with anisotropic acceleration and that the acceleration is directed in the same direction as Dark Flow. So far, Allais Effect measurements have taken place blindfolded. Now, it is possible to calculate and predict when and where the Allais Effect can be confirmed, and of course also predict where and why no effect can be confirmed. In addition, it is now also possible to calculate how strong anomalies can be expected, and even whether the effect can be measured before or after the eclipse reaches the maximum. Still different pendulums are the most effective instrument to use. The reason why such strange devices are the best option is also no longer a mystery. This new theory also uncovers why advanced instruments can't be used successfully, which also explains why such significant acceleration could have been hidden for such a long time. The exact magnitude of the anisotropic acceleration is calculated to be around 35 μGal ($3.5e^{-7}$ m/s^2), and not much deviation must be expected in the years to come.

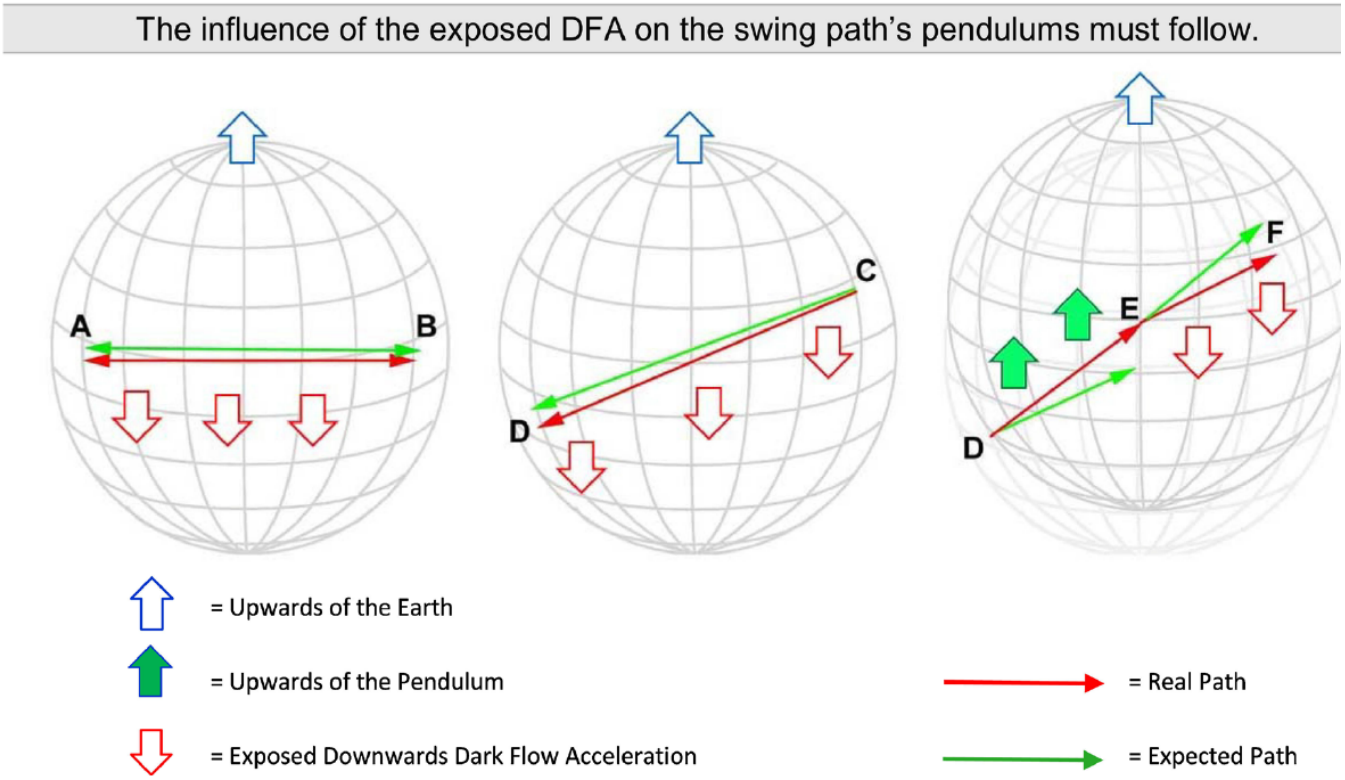
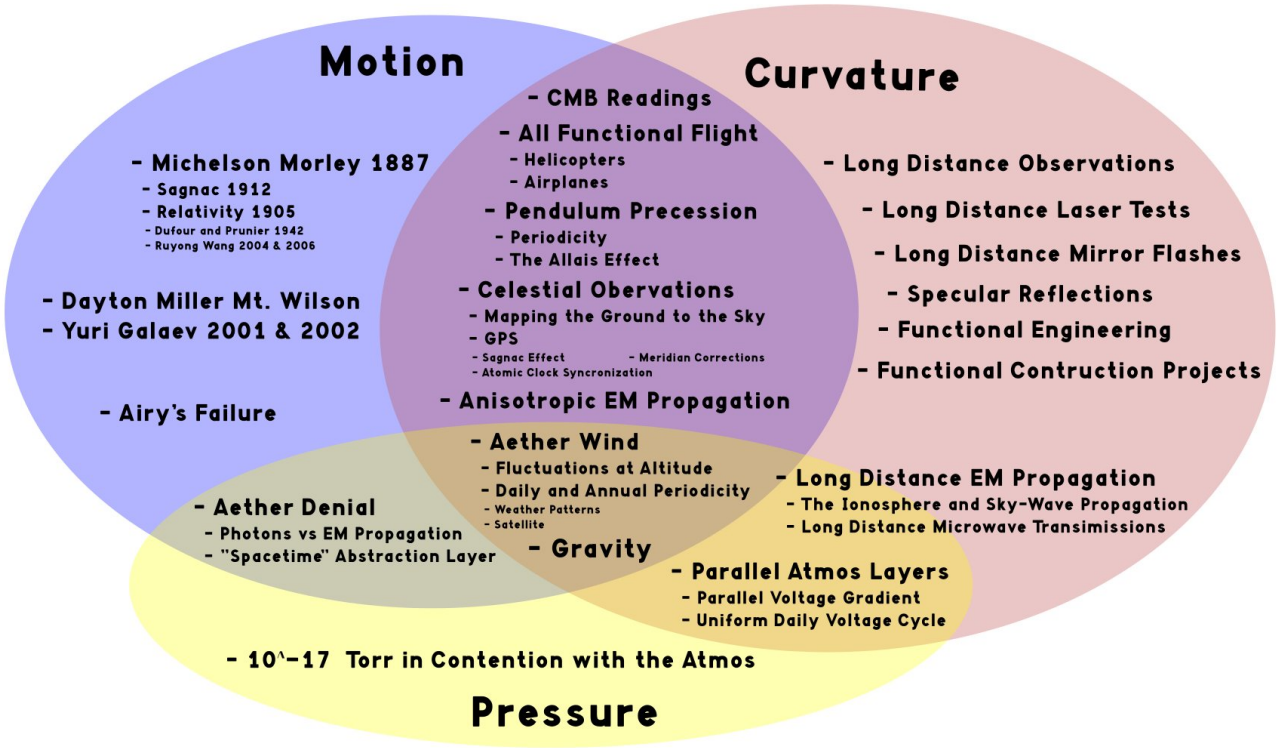


Figure 4. The Pendulum swings between A & B. Figure 5. The Pendulum move from C to D. Figure 6. The Pendulum move from D to E to F.



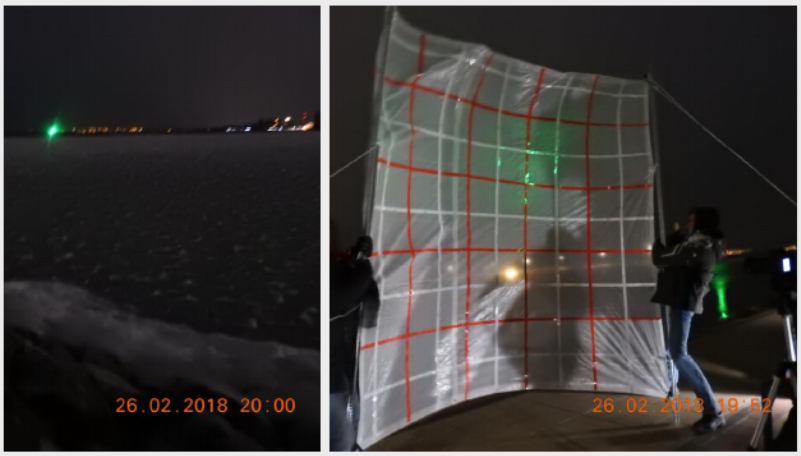
Curvature

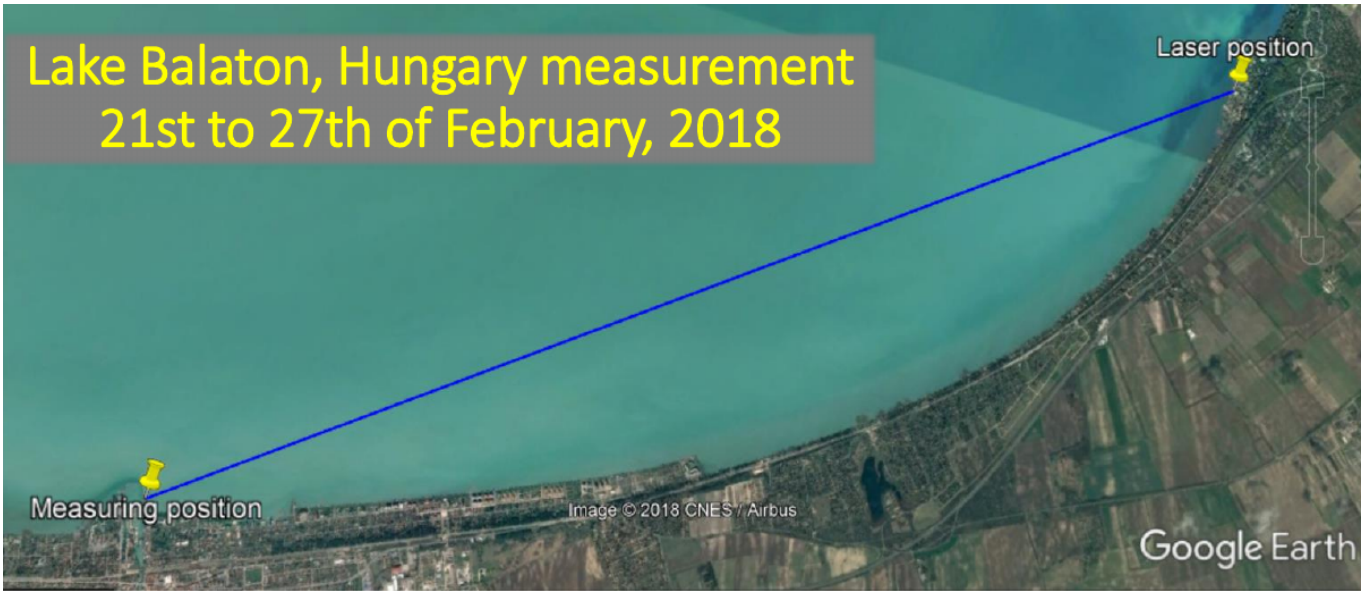
2018 FE Core Laser Test

Laser tests taken in Hungary and The Netherlands

MEASUREMENT PROCEDURE

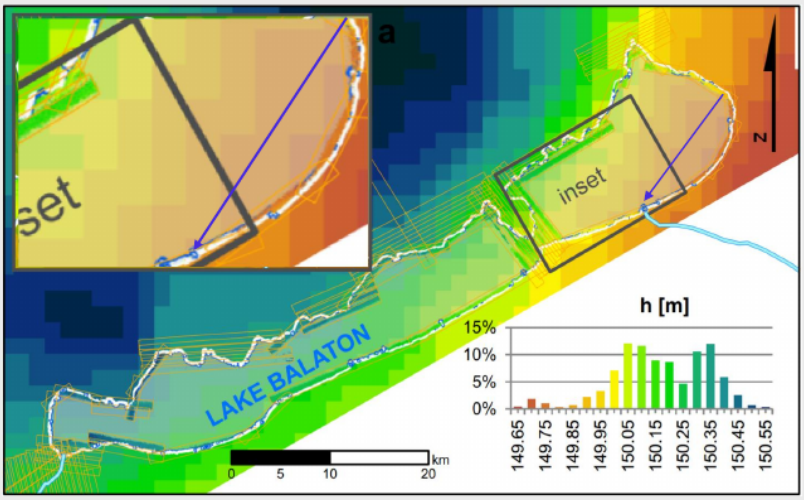
Once the beam was directly on the target, we took the measurement readings. We used optical visualization with cameras and a measurement board.





Map of Lake Balaton showing the measuring position and laser position.

GEOID UNDULATION – LAKE BALATON



Geoid undulation is the term used to describe the distance of the geoid above (positive) or below (negative) the mathematical reference ellipsoid (WGS84).

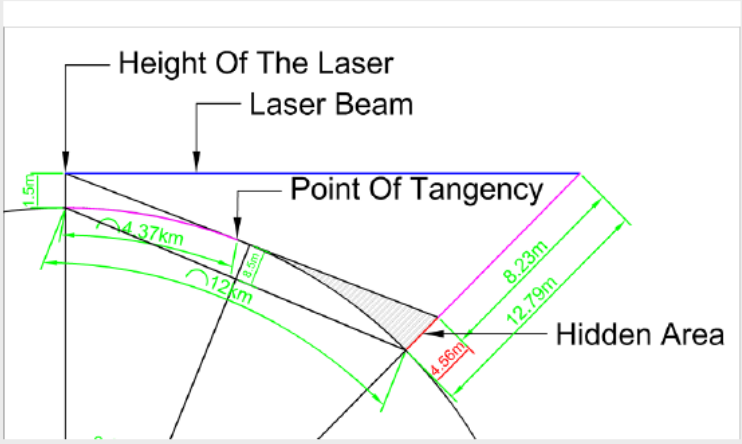
Geoid undulation was at the **same level** in both positions.

MEASUREMENT 1 - LAKE BALATON

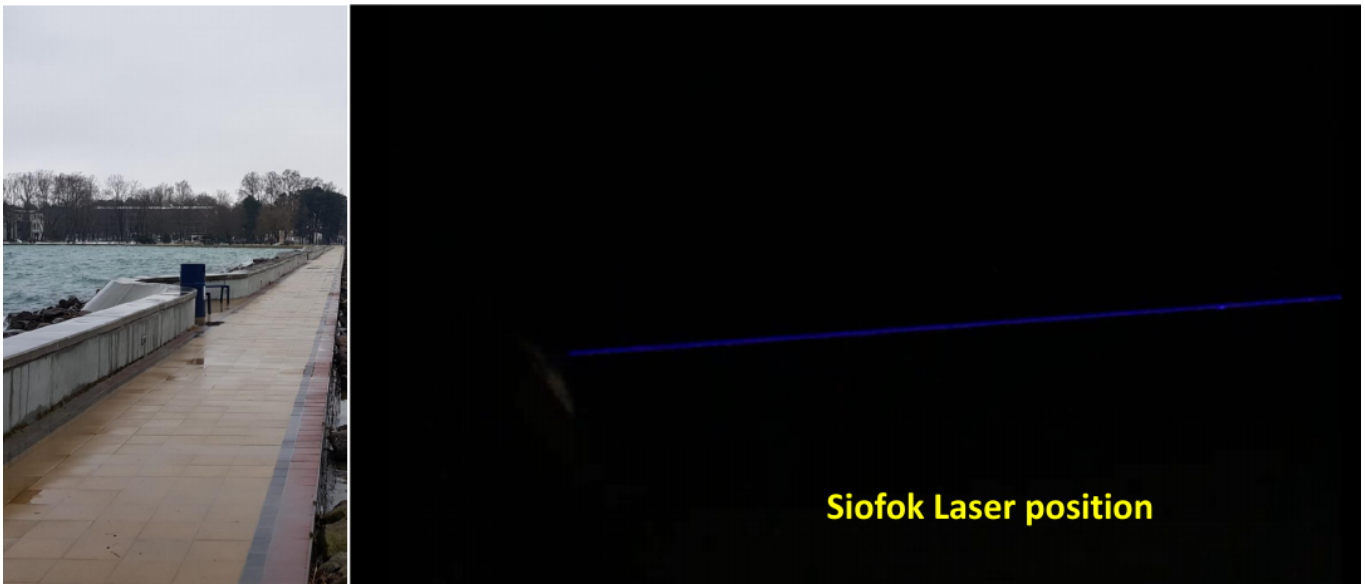
On the 22nd of February at 22:44 PM, the blue laser pointer was at the opposite shore (Siofok) to help the targeting of the SALAD at the laser position. The pointer was held in hand at 1.5 meters (4.92 feet) above the lake surface level at Siofok. The team at the laser position was able to see the beam and record it from 12 km (7.46 miles) at 1.6 meters (5.25 feet) above the water level.

LASER BEAM HIDDEN HEIGHT CALCULATION

The 12km (7.46 miles) distance calculations based on a spherical model results in a target hidden height of the measurement position of 4.56 meters (14.96 feet)



MEASUREMENT 1 22nd February 2018 at 22:44 PM



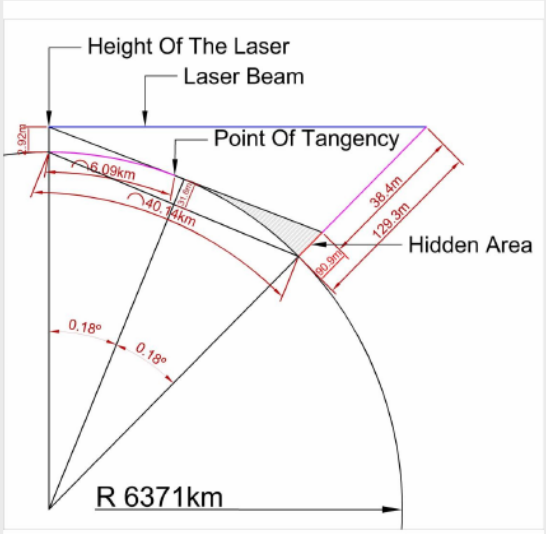
MEASUREMENT 7 LAKE IJSEL TARGET 4

On the 22nd of April at 23:20, the blue laser pointer was placed on the SALAD at 2.92 meters (9.58 feet) above the lake surface heading to 3.66°.

It was seen on the opposite shore at 40.14km (24.94 miles) to Target 4 at 1.5 meters (4.92 feet) above the lake surface.

LASER BEAM HIDDEN HEIGHT CALCULATION MEASUREMENT 7 TARGET 4

The calculations based on a spherical model results in a target hidden height of the Measurement 7 Target 4 position of **90.81** meters (297.33 feet)



CONCLUSION

As all large bodies of water should follow the geopotential surface, we proved these lakes are NON-UNIFORM with the WGS84 model.

This has a very important impact on the WGS84 model it self:
The **WGS84 MODEL IS INCORRECT** as these large scale height differences are not detectable! The geoid surface heights do NOT conform with the land measurements.

But don't we see boats go over the horizon?

Where does the Sun go at night?

Optics and Curved Visual Space

- We have a resolution limit (we can't see forever)
- We perceive from a single point in 3D space
- Angular resolution imposes a non-linear drop-off in our ability to resolve items as they move away from us
- Your ability to ascertain objects dissipates into an unresolvable angle, in a non-linear fashion

---

Sixth Grade Art Class and Perspective

- The train tracks do not *actually* converge
- This is a result of perceiving from a single point in 3D space

HYPERBOLIC GEOMETRY AND BINOCULAR VISUAL SPACE

Samantha Zook

December 17, 2013

Abstract

Euclidean geometry is widely accepted as the model for our physical space; however, there is not a consistent model for our visual space. There is evidence that our eyes work to make pictures and images of the physical space using a hyperbolic model. In this paper we are going to explore hyperbolic geometry and hyperbolic models of binocular visual space. In hyperbolic geometry, all of the axioms of Euclidean geometry hold except the parallel postulate. The models of hyperbolic parallel lines explain how we perceive parallel lines as curved, such as how railroad tracks going off in the distance appear to converge. We will show that binocular visual space may indeed be best explained by a hyperbolic model.

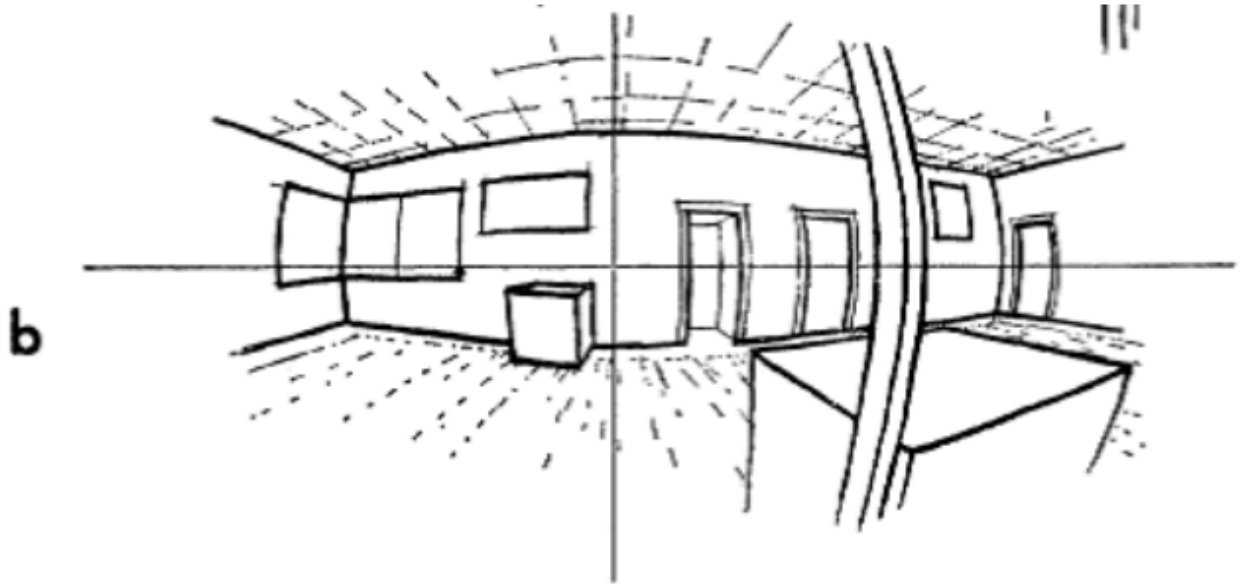
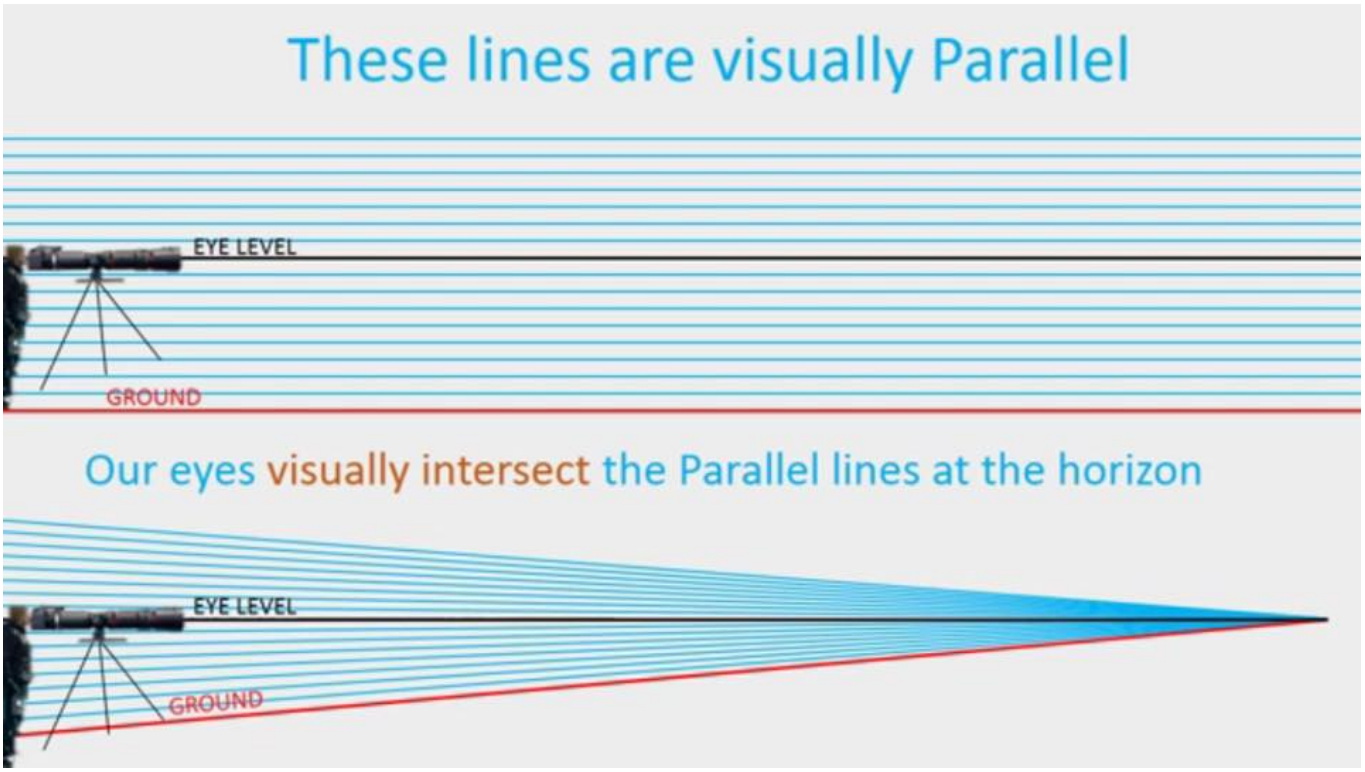
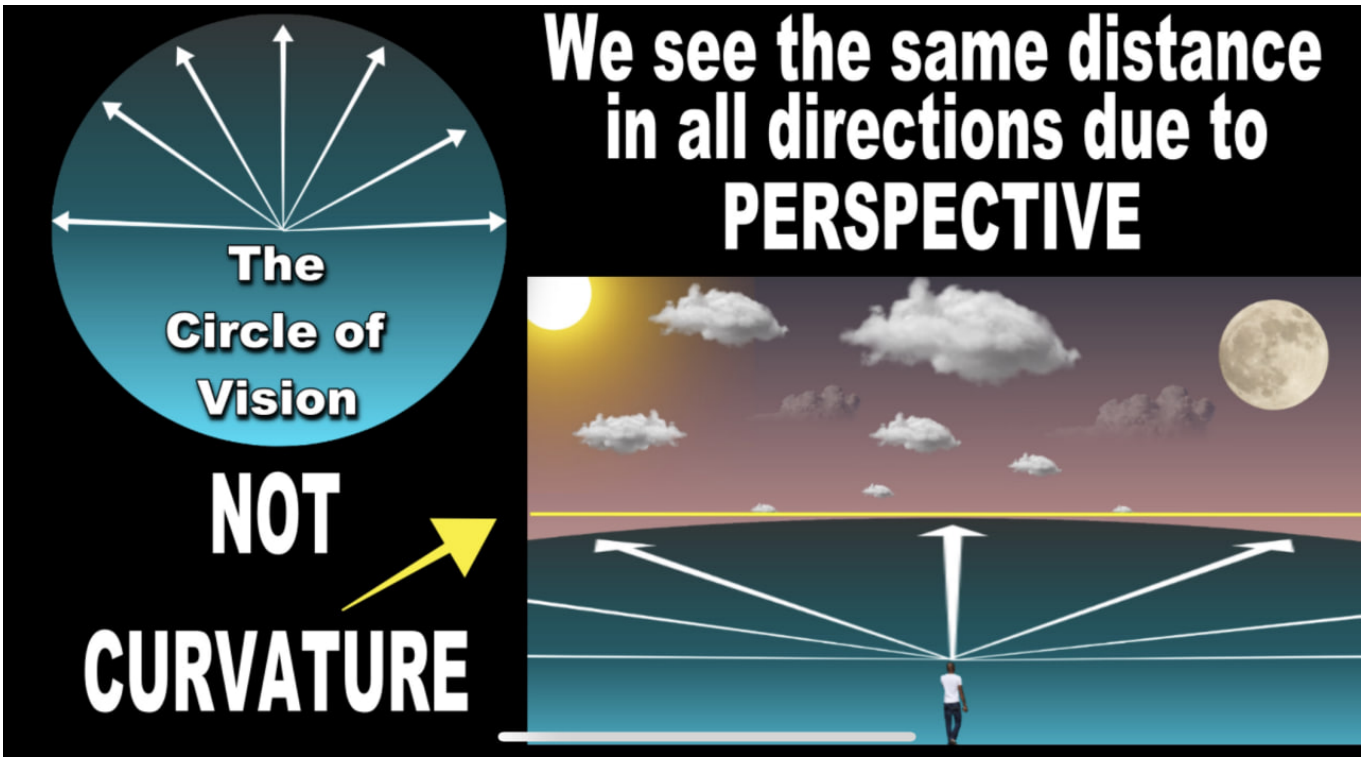


Figure 5: How we might see distortions in a wall [3]




We see the same distance in all directions due to PERSPECTIVE
The Circle of Vision
NOT
CURVATURE

Direct measurement of the curvature of visual space

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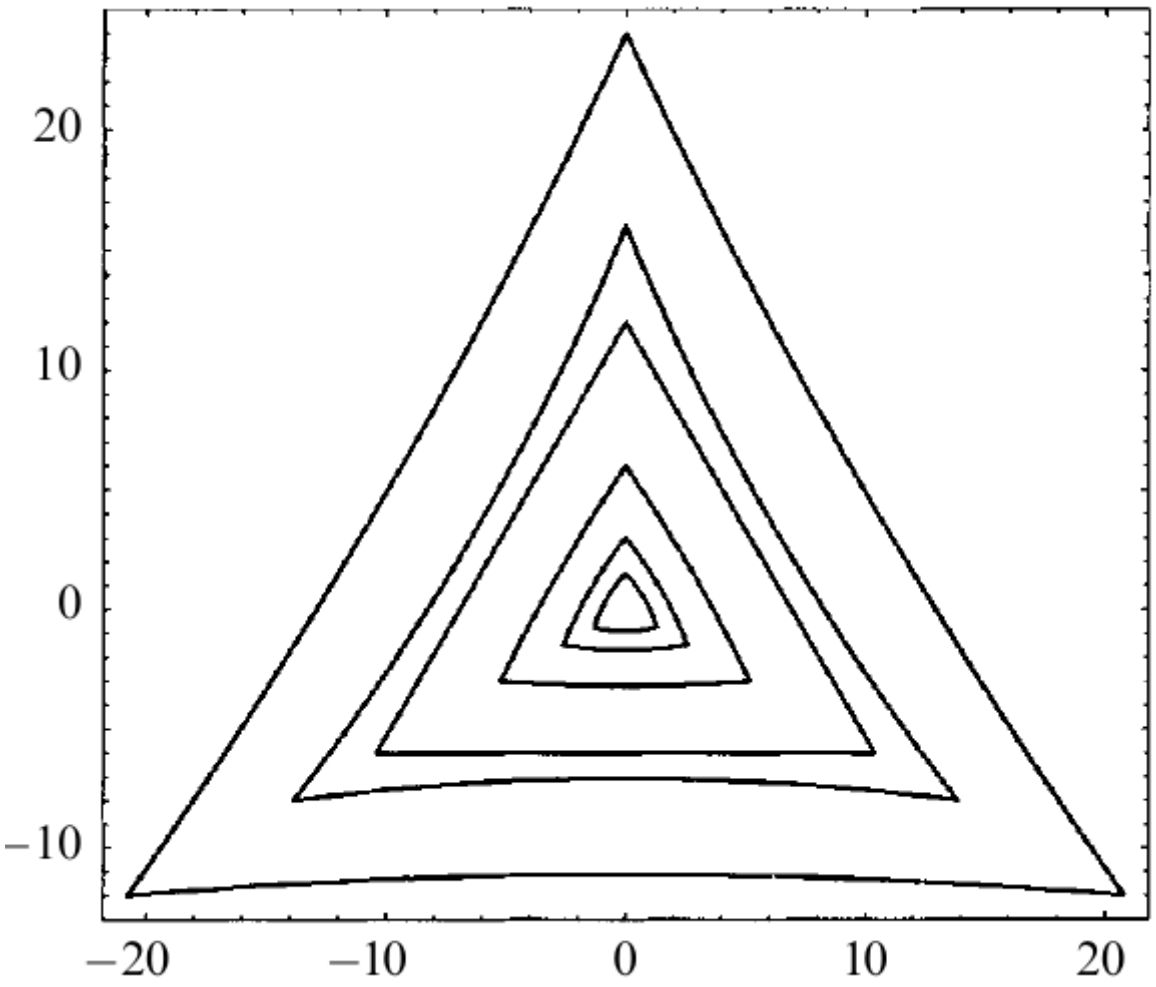
Received 25 March 1999, in revised form 23 August 1999

Abstract. We consider the horizontal plane at eye height, that is all objects seen at the horizon. Although this plane visually degenerates into a line in the visual field, the 'depth' dimension nevertheless gives it a two-dimensional structure. We address the problem of intrinsic curvature of this plane. The classical geometric method is based on Gauss's original definition: The angular excess in a triangle equals the integral curvature over the area of the triangle. Angles were directly measured by a novel method of exocentric pointing. Experiments were performed outside, in the natural environment, under natural viewing conditions. The observers were instructed not to move from a set location and to maintain eye height, but were otherwise free to perform eye, head, and body movements. We measured the angular excess for equilateral triangles with sides of $2-20$ m, the vantage position at the barycenter. We found angular excesses and deficits of up to 30°. From these data we constructed the metric. The curvature changes from elliptic in near space to hyperbolic in far space. At very large distances the plane becomes parabolic.

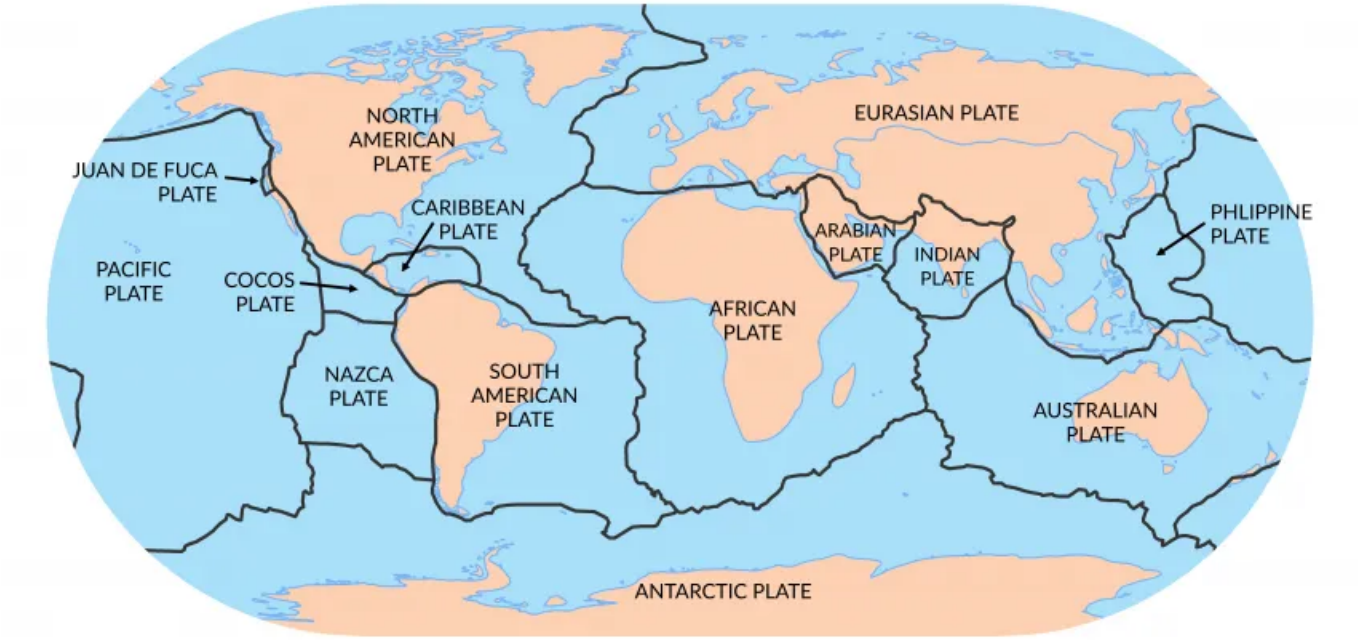


field look ‘inflated’ (thus there will be an angular excess) whereas those in the far field look ‘deflated’ (thus there will be an angular deficit). Without any more calculation, the raw data thus reveal that the optical space is elliptic (positively curved) in the near zone but hyperbolic (negatively curved) in the far zone.

5 The geodesic surface

We shall now perform one further step of data processing that is of a more complicated nature. Given the intrinsic curvature as a function of distance we proceed to construct a surface that can be depicted and has the same intrinsic curvature as the horizontal plane at eye height. In order to do this we add a dimension to the horizontal plane at eye height.

Globular Plate Techtonics

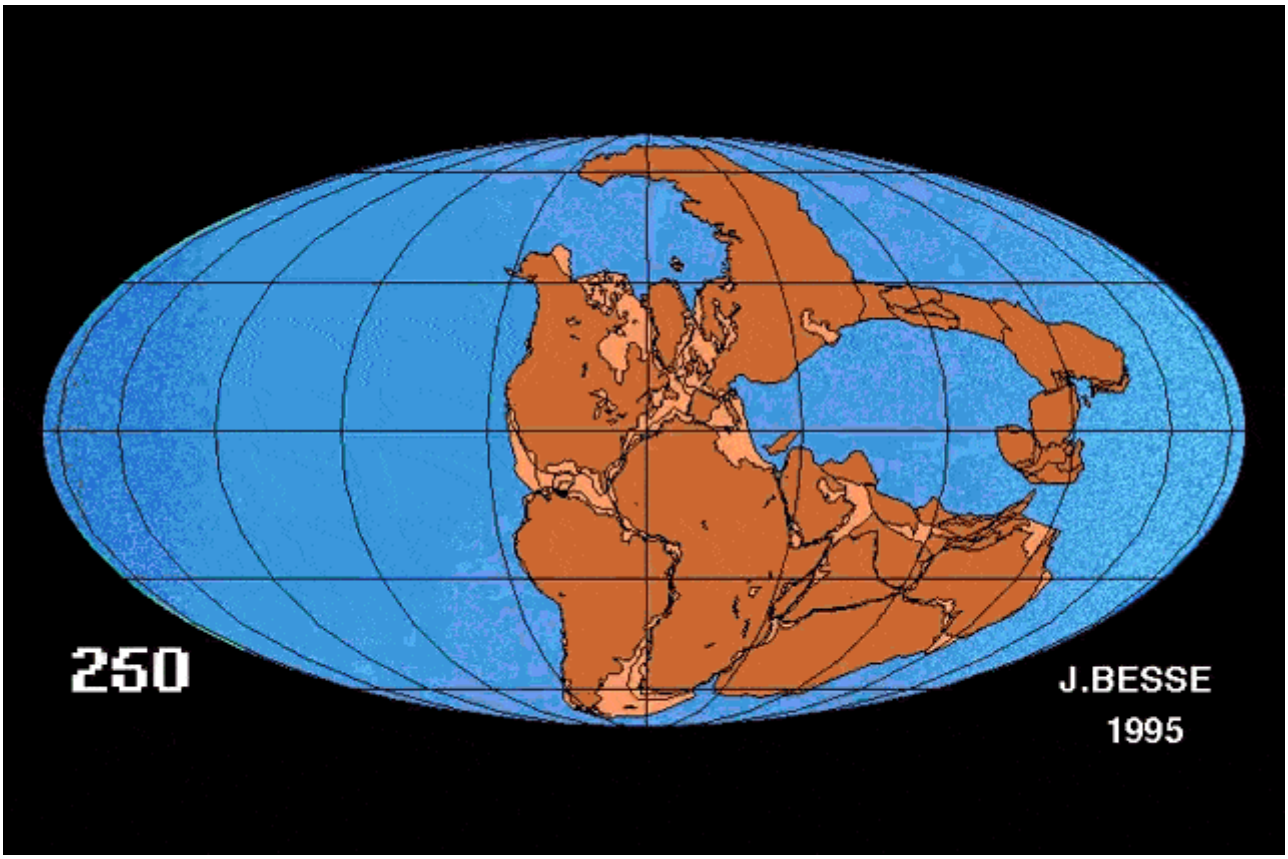


A Rotating Globe

What should a maximum-momentum, minimum-energy state look like?

- Semi-liquid interior should accentuate lack of uniformity in rotation
- The continents should "drift" outward to align the equator

Pangea



- Would cause great instability
- Paired with a semi-liquid interior, uniform rotation is impossible
- Foundational to geophysical assertions of the globe

Magnetogeology

- Rely on magnetic striping across ocean floor
  - Unsubstantiated assertions
  - Relating to events hundreds of millions of years in the past
- Pole Reversals do not match geodynamo "predictions"
- Geodynamo is built on numerous ad-hoc assumptions and offers no predictive value

---

Geodynamo Model

- Convection currents in the *outer core*
- Not aligned with Earth's axis, despite "coriolis" being invoked as the central cause of the currents

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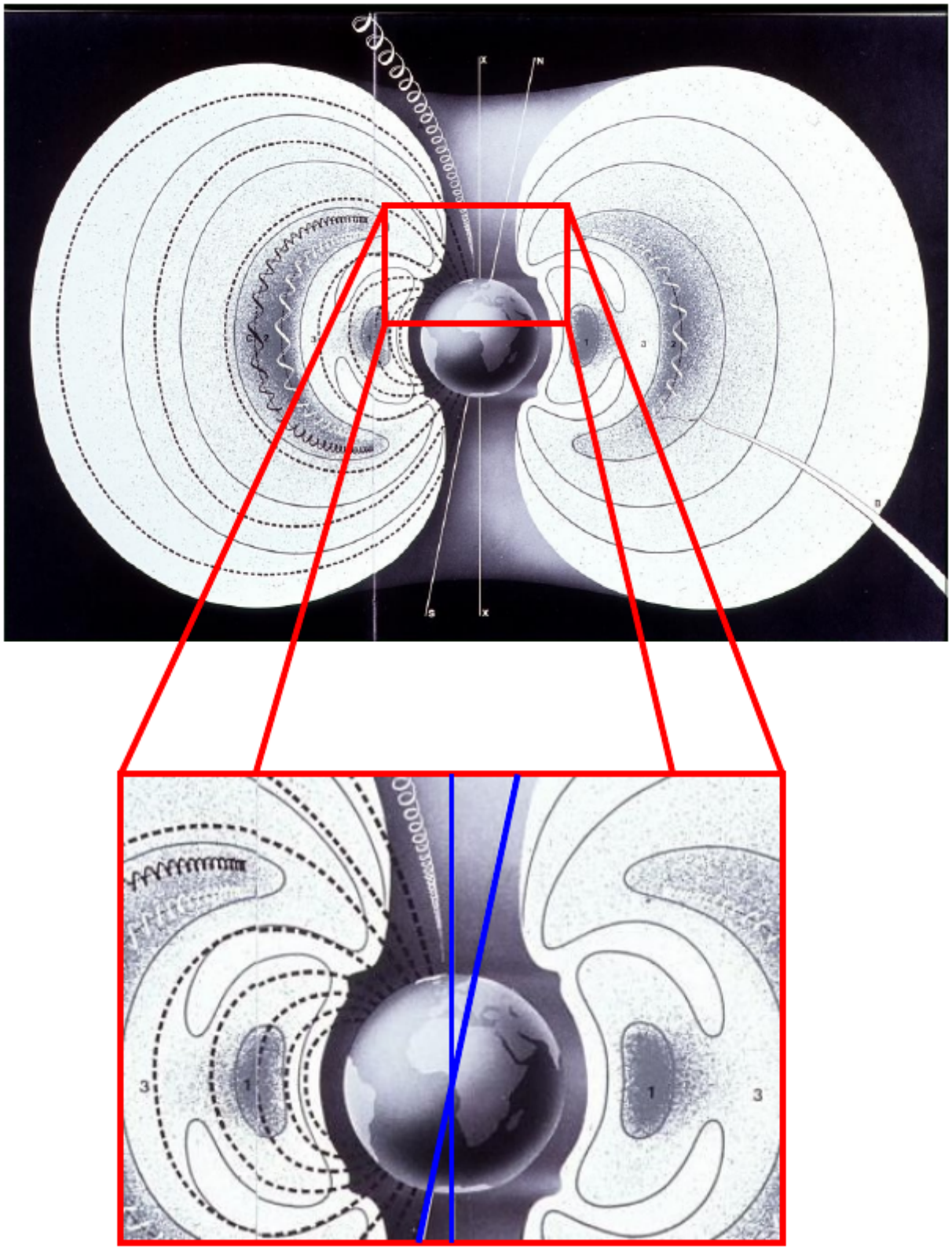
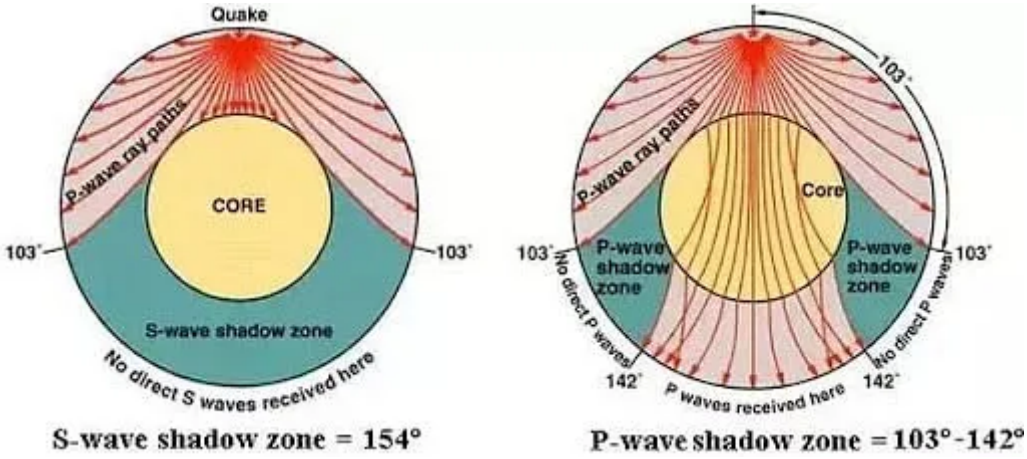


P and S Wave Shadow Zones



- S wave shadow zones clearly work on a flat earth
- P wave shadow zones might be explainable by numerous phenomenon, and rely on incremental layering models that cannot be substantiated or falsified

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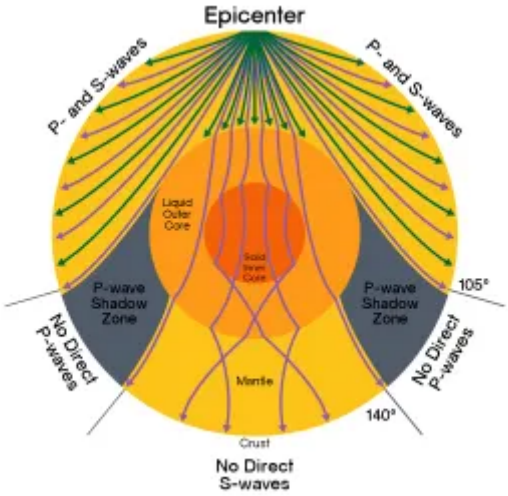

> In so far as a scientific statement speaks about reality, it must be falsifiable; and in so far as it is not falsifiable, it does not speak about reality.

- Sir Karl Popper (Philosopher)

Seismic Anomalies and the Dynamic Evolution of the Earth's Crust and Upper Mantle

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Received October 9, 1968

The seismic activity of the Earth suggests that the crust is in a dynamic condition. A number of major regularities in the seismic energy release in major provinces on the Earth may be explained by the fact that each continent is uniquely dynamic and mobile. The American continent (especially South America) is more inclined to react to changes of external (cosmic) forces, which intensifies its greater mobility. Relative to this point, in the last quarter of the century (1940–1964) three-fourths of all earthquake energy was released when the position of the Moon was over the northern hemisphere of the Earth (at the northern apparent declination of the Moon). This positional relationship pertains to the seismic foci of the northern, as well as the southern hemispheres. Thus the position of the Moon in its orbit is primarily related to the seismicity of the American continent, which released more than 82% of global earthquake energy of magnitude $M \geqslant 8.4$ during the northern lunar declination.

Different degrees of reaction of individual continents to extraterrestrial influences do not agree with the idea of the constancy of the continents. However the mobility of continents, each of which reveals unequal dynamicity, is thought to be a direct consequence of the effect of cosmic forces.

Space weather and earthquakes: possible triggering of seismic activity by strong solar flares

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Based on the results described above we can suppose that the earthquake triggering due to impact of strong solar flares is possible. The physical mechanism of interaction of week electrical current with rocks under critical stress-strain state is not clear today. The effect of seismicity response to electrical action may be explained either by electric current concentration in the narrow highly conductive fault zones [Han et al., 2004] or by secondary triggering mechanisms driven by electric pulses, like electromagnetic stimulation of fluid migration into the fault zone resulted in reduction of the fault strength properties [Novikov and Novikova, 2014]. It should be noted that these hypotheses have only a phenomenological character without a detailed theoretical justification and experimental verification. New fundamental knowledge is needed on the mechanisms of interaction of the electromagnetic field with rocks, as well as on the influence of electric/electromagnetic fields in combination with natural geophysical fields on deformation processes in the fault with specific parameters (electrical conductivity, orientation and maturity for earthquake occurrence).

How to "compute a globe"

2-D/3-D multiply transmitted, converted and reflected arrivals in complex layered media with the modified shortest path method

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Grid-cell based schemes for tracing seismic arrivals, such as the finite difference eikonal equation solver or the shortest path method (SPM), are conventionally confined to locating first arrivals only. However, later arrivals are numerous and sometimes of greater amplitude than the first arrivals, making them valuable information, with the potential to be used for precise earthquake location, high-resolution seismic tomography, real-time automatic onset picking and identification of multiple events on seismic exploration data. The purpose of this study is to introduce a modified SPM (MSPM) for tracking multiple arrivals comprising any kind of combination of transmissions, conversions and reflections in complex 2-D/3-D layered media. A practical approach known as the multistage scheme is incorporated into the MSPM to propagate seismic wave fronts from one interface (or subsurface structure for 3-D application) to the next. By treating each layer that the wave front enters as an independent computational domain, one obtains a transmitted and/or converted branch of later arrivals by reinitializing it in the adjacent layer, and a reflected and/or converted branch of later arrivals by reinitializing it in the incident layer. A simple local grid refinement scheme at the layer interface is used to maintain the same accuracy as in the one-stage MSPM application in tracing first arrivals. Benchmark tests against the multistage fast marching method are undertaken to assess the solution accuracy and the computational efficiency. Several examples are presented that demonstrate the viability of the multistage MSPM in highly complex layered media. Even in the presence of velocity variations, such as the Marmousi model, or interfaces exhibiting a relatively high curvature, later arrivals composed of any combination of the transmitted, converted and reflected events are tracked accurately. This is because the multistage MSPM retains the desirable properties of a single-stage MSPM: high computational efficiency and a high accuracy compared with the multistage FMM scheme.

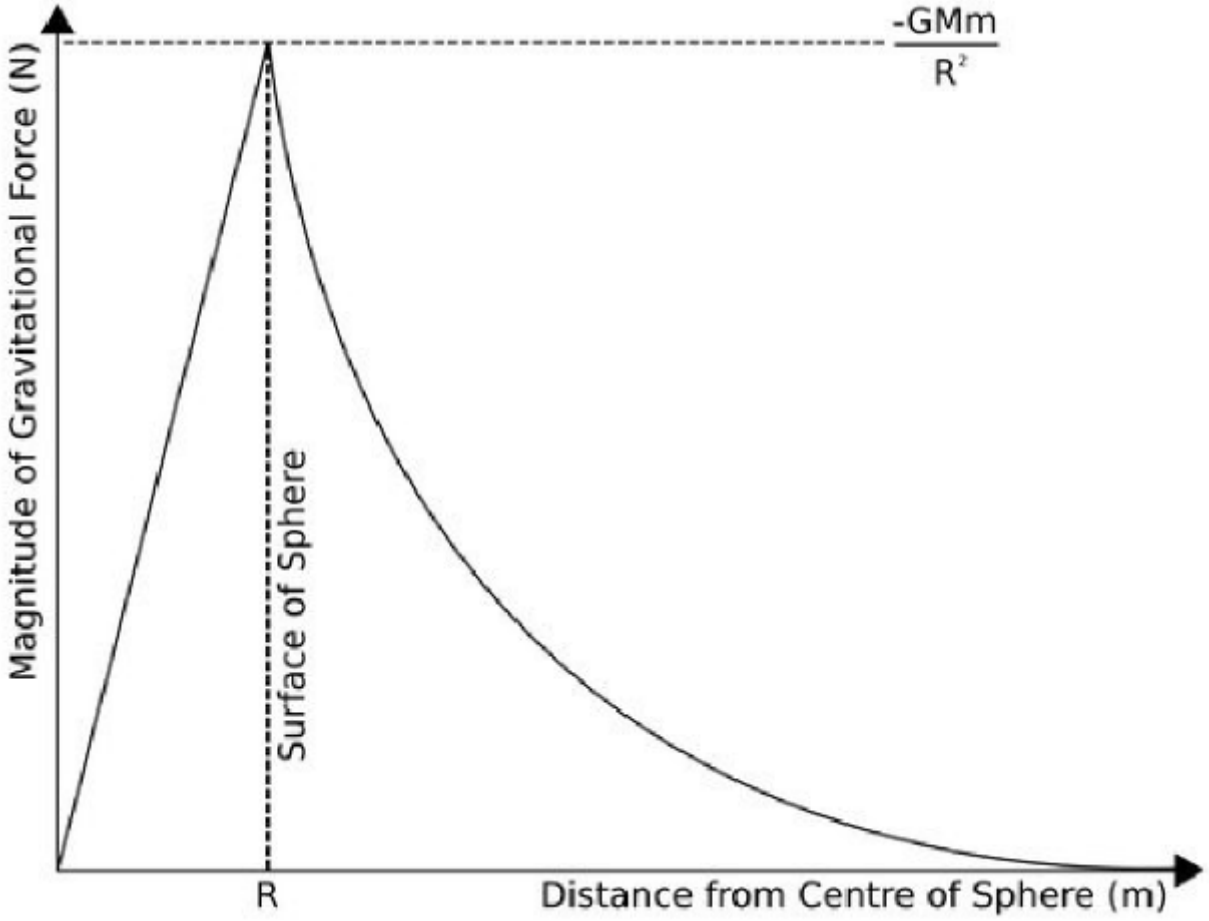
3 BENCHMARK TESTS WITH THE FFM SCHEME

Previously we noted that for first arrival calculations, the one-stage MSPM delivers the same solution accuracy under less CPU time than the regular SPM approach (generally it is one order of magnitude faster—see Bai *et al.* 2007). To assess the viability of the multistage MSPM, we compare it against the multistage FMM (2-D case, Rawlinson & Sambridge 2004; 3-D case, De Kool *et al.*

2006). Because the code of the multistage FMM is in Cartesian coordinates for 2-D models and spherical coordinates for 3-D models, but our code for multistage MSPM is in Cartesian coordinates under both 2-D and 3-D models, the following comparisons are based on the 2-D velocity model. Additionally, the multistage FMM is only capable of tracking the multiply transmitted and reflected arrivals, and therefore, we study multiple arrivals of transmissions and reflections.

Newton's Shell Theorem

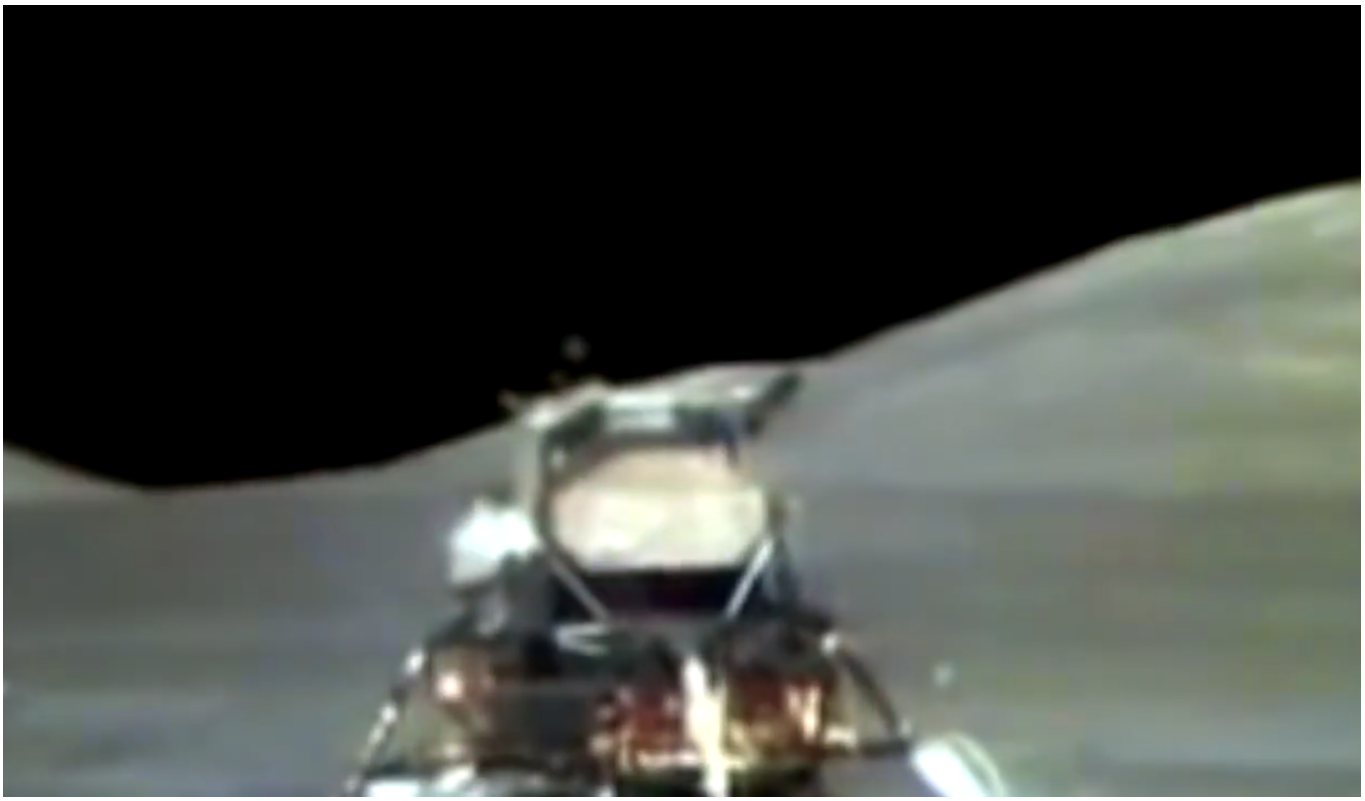
- The Earth's "dense iron core" is located at the point of 0 gravity
- Ad-hoc iron core is necessary for the globe to invoke point-specific gravity, which is required for a uniform downward bias, across the earth



This is of course better explained with a uniform downward bias, which would align with the downward electrical current from the atmos which is objectively measured.

This is why the voltage gradient lines across the earth are *parallel* to each other, and *perpendicular* to the ground. They are not oriented as concentric spheres.

Apollo 17



Thank you