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Erratum to "The Cause of the Allais Effect Solved"

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The original online version of this article (Bjarne Lorenzen (2017) The Cause of the Allais Effect Solved. Volume 7, 69-90 doi: 10.4236/ijaa.2017.72007) unfortunately contains several mistakes.

1) Figure 3 must be replaced, with the one below, the previous Figure 3 did not show a correct solar eclipse.

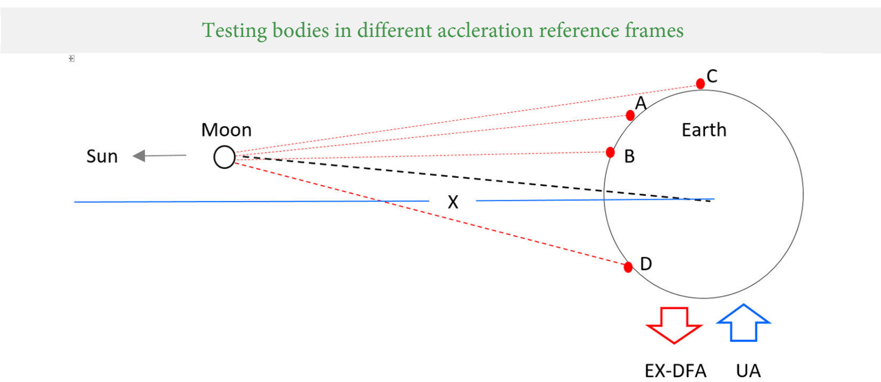


Figure 3. The Earth & testing bodies in different acceleration reference frames EX-DFA = Exposed Dark Flow Acceleration. UA = Upwards Acceleration of Earth.

2) The way to calculate the magnitude of the Allais Effect was wrong. Vector addition must be used instead. However the magnitude of the Allais Effect is the same as mentioned in the article, only the method of calculation has changed.

3) The solar eclipse the 21 of August is not one of the best options to measure Allais Effect. The Lunar Eclipse 7 of August is better. This is based on the fact that the Moon is only 0.4˚ above ecliptic at lunar eclipse the 7 of August, however 0.8˚ above ecliptic at solar eclipse the 21 of August.

4) It is incorrect that pendulum is the best device to measure the Allais Effect.

Measurement with modern gravimeter (if done at the correct position) is a much better option. The theory is not changed, however in the main article it was overlooked that measurement with two different gravimeters near arctic, (by some solar and lunar eclipse) is a much better option. **Prediction:** A relative and an absolute gravimeter (situated at the same place) between the 60˚and 70˚ latitude will by (some) solar (and lunar) eclipse measure different acceleration due to gravity. The relative gravimeter will only measure the acceleration due to gravity of the earth; however, in addition to that, the absolute gravimeter will also measure DFA. The difference will be that the absolute gravimeter will measure plus 35 μGal (±10 μGal) (Figures 7-9). The variation depends on where the measurement takes place and on the rotation of Earth. Which solar and lunar eclipse are options can also easily be predicted.

THE RESULTING ACCELERATION AFFECTING THE EARTH

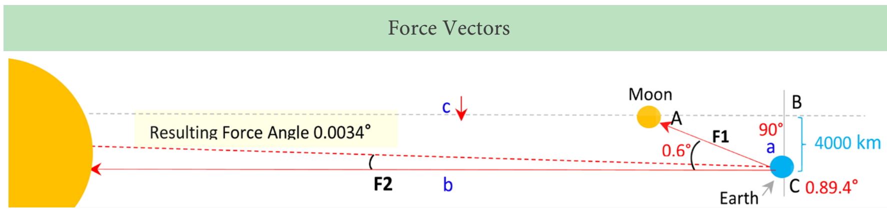


Figure 1. **F1** = Force Factor 174, **F2** = Force Factor 1. The Resulting Force calculated to 0.0034˚.

Calculation of the Upward Acceleration of the Earth by an Eclipse				
a (km)	C	Resulting Acceleration	Upwards Acceleration	Result
3000	0.45	0.0026˚	sin(0.0026)0.006	= 0.00000027 m/s²
4000	0.6	0.0034˚	sin(0.0034)0.006	= 0.00000035 m/s²
5000	0.75	0.0043˚	sin(0.0043)0.006	= 0.00000045 m/s²
The resulting acceleration due to gravity of the Sun + the Moon (affecting Earth) = 0.006 m/s²				

THE ANGLE OF THE RESULTING FORCE

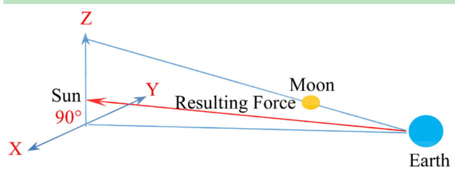


Figure 2. Vertical culmination of the Resulting Force.

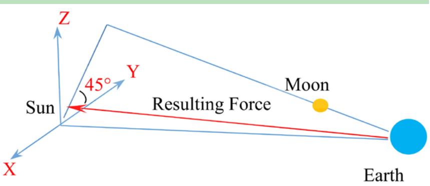


Figure 3. The Resulting Force pointing 45˚.

The **Resulting Force** (**RF**) (of the Sun and Moon) acting on Earth must point as vertical as possible (Figure 1 and Figure 2) to be able to accelerate the Earth upwards fast enough in order to expose DFA.

Before solar eclipse, the RF is pointing mainly horizontal. Twelve hours before eclipse, the angle (where RF is pointing) starts inclining. Eight hours before eclipse this angle 22.5˚ vertical and four hours before solar eclipse the angle is 45˚ vertical (Figure 3), finally by eclipse the angle of the RF is completely 90˚ vertical (Figure 2).

THE ANGLE OF THE RESULTING FORCE

Imaging a circle (radius 8 km) at the center of the Sun (Figure 4 and Figure 6)

- 8 hours before eclipse, the RF is pointing 22.5˚ vertical.
- 4 hours before eclipse, the RF is pointing 45˚ vertical
- 4 hours after eclipse, the RF is pointing 45˚ vertical
- 8 hours after eclipse, the RF is pointing 22.5˚ vertical

The required vertical upwards acceleration of the Earth is unique only by solar and lunar eclipse. The 8000 km radius of the abstract circle (on the Sun) is based on the angle between the Moon and Earth at 0.6˚, (which is perfect for pendulum measurement).

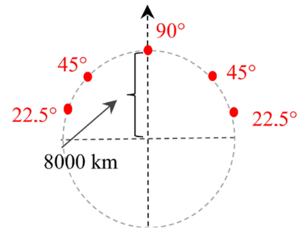


Figure 4. Angle of the Resulting Force.

The gravimeter measurement test is preferable because the measuring equipment can measure the entire range of Allais Effect from one and the same position (Figure 5).

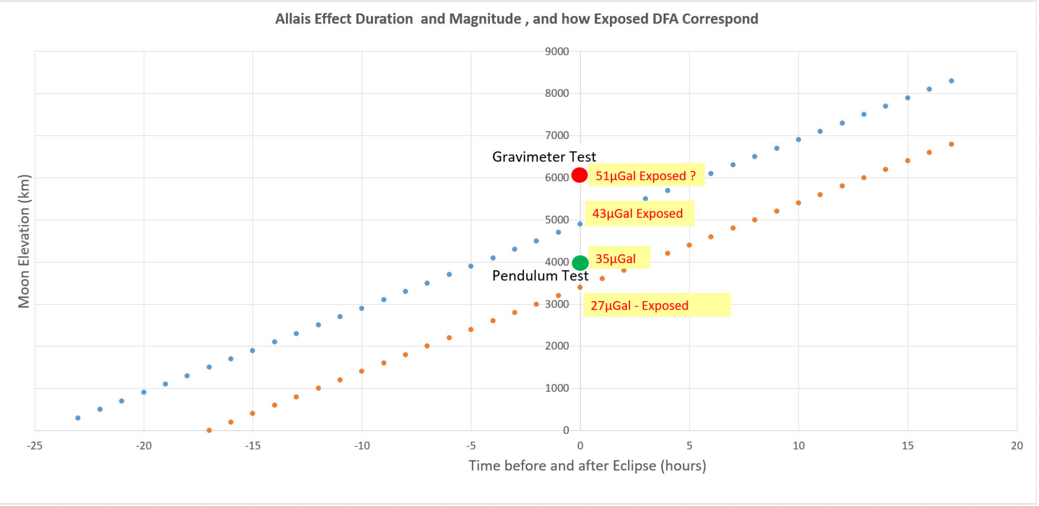


Figure 5. This images show how the elevation of the Moon correspond to a certain exposed DFA.

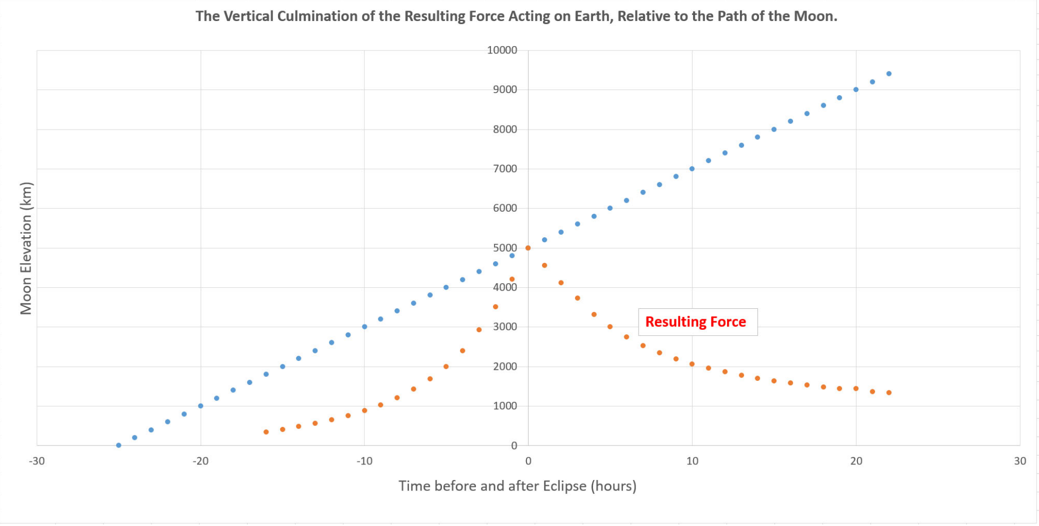


Figure 6. Exactly at solar (or lunar) eclipse the vertical force component (acting on Earth) is culminating.

THE ULTIMATED ALLAIS EFFECT MEASSUREMENT METHOD

By (some) solar (and lunar) eclipses, the Moon pulls/accelerates the Earth slightly upwards (north) (**Figure 2**), however (for a short period) this doesn't directly effect a testing body situated in the artic area (given that the testing body is not connected with Earth).

This means that for a short period, (by some solar and lunar eclipse) the moon will therefore prevent the Earth from following the Dark Flow Acceleration (DFA) (towards south), but a testing body that is not connected with Earth is free to follow the DFA (south).

This can be measured because a testing body inside an **absolute free fall gravimeter** (**Figure 7**) is free to follow DFA. But a testing body inside a **relative gravimeter** is connected to the gravimeter and therefore also connected to the upward accelerating Earth via the spring connecting the testing body to the gravimeter.

The testing body of the **relative gravimeter** must therefore follow the upwards acceleration of the Earth and is thus not able to measure any DFA effect.

- The **relative gravimeter** will measure the acceleration due to the gravity of Earth.
- The **absolute gravimeter** will measure the acceleration due to the gravity of Earth + DFA.

The disagreement between the 2 different kinds of gravimeters is expected to be around maximum 40 μGal

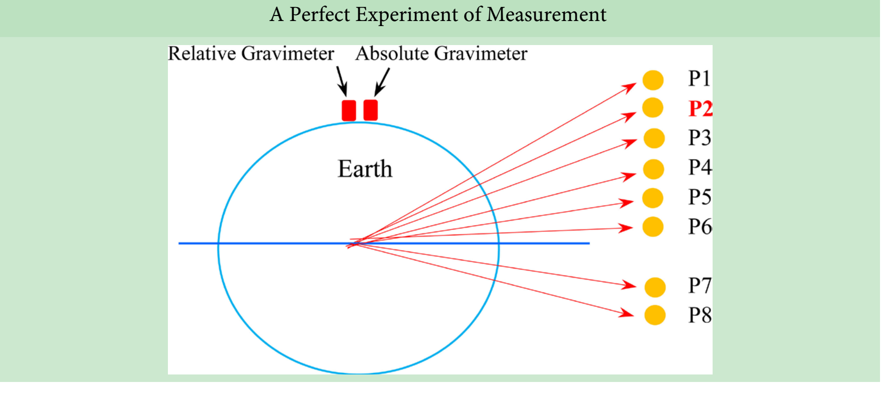


Figure 7. The ultimate Allais Effect measurement method.

P1. Illustrates the Moon 1000 km above the Earth (**Figure 7**)—this is not the perfect position because the testing bodies (inside the 2 gravimeters) is also pulled upwards by the Moon and hence is not totally free to interact with DFA. However, the Allais Effect can still be measured, but not the full force of it.

P2. Illustrates the Moon at the same level/altitude as the 2 gravimeters (2 testing bodies)—**this is the perfect position** (P2), because the testing body inside the 2 gravimeters is at the same level and hence is totally free to interact with DFA. The full effect of the Allais Effect can be measured.

P3. And P4 + P5 illustrate the Moon lower than PP (P2). The testing bodies (inside the 2 gravimeters) are (also) pulled slightly downwards by the lower Moon. However, the full effect of the Allais Effect can be measured.

P6. Illustrates the Moon lower than PP. The testing bodies are pulled slightly downwards by the lower Moon. At this position, the Moon cannot accelerate the Earth enough upwards to fully expose DFA. Therefore, the anomaly is weaker at this point.

P7. And P8—The Moon is too low; no effect will be measured.

Anomalies/deviations between the absolute gravimeter and relative gravimeter measurements must be expected, in fact increasing to about 35 μGal, and very likely more than that. This is a significant anomaly that no one will expect.

As already mentioned, a free fall testing body is free to interact with DFA from that experimental position, but a relative gravimeter (or a pendulum) will not because the testing bodies in these cases are connected with Earth where by kinetic energy/upwards accelerating of the Earth will affect these suspended testing bodies.

The anomaly can be detected 24 hours starting by a gradually increasing anomaly, culminating by maximum solar eclipse and decreasing and gradually vanishing 12 hours after the solar eclipse.

THE ALLAIS EFFECT IS A LONG-LIVED ANOMALY.

The perfect position (P2) for measuring the Allais Effect with a pendulum is off course also when the Moon accelerates the Earth slightly upwards without also directly pulling/accelerating a test pendulum upwards.

This means that the Moon prevents the Earth from following the Dark Flow Acceleration, but the Moon cannot prevent a testing body from following Dark Flow (at least not for a short period of time).

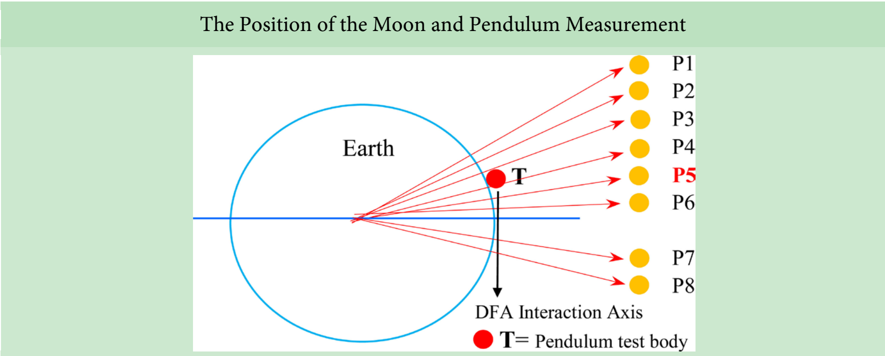


Figure 8. P5 = Perfect position of the Moon, **T**=Perfect position of the testing body.

P1. If the Moon is at position P1, P2 and P3 (**Figure 8**), it will pull/accelerate the Moon upwards too fast. Testing body "T" will therefore not be able to follow the DFA, and no Allais Effect can be measured.

P4. At position P4, the Moon will still accelerate the testing body upwards, but not enough to cancel out the exposed DFA. The Allais Effect can be measured, but not the full potential.

P5. The Moon at position P5 is the **Perfect Position (PP)** to allow a pendulum to measure the Allais Effect. Because the Moon doesn't pull the testing body upwards and because the DFA interaction Axis is (almost) parallel to the DFA axis.

P6. At position P6, the Moon is lower than the PP. The testing body is pulled slightly downwards by the lower Moon. At this position, the Moon cannot accelerate the Earth enough upwards to be able to fully expose DFA. Therefore, the anomaly is weaker than when the Moon is at this position.

P7. Position P8 is bad because the Earth is not accelerating upwards, and therefore DFA is not exposed.

Both experiences and calculation show that the period during which the Allais Effect can be measured is not only few hours but rather 20 hours.

Also notice that it takes the Moon 24 hours to reach a 0.72˚ higher or lower altitude. When the Moon is lower or higher relative to P5 (the Perfect Position), this will naturally affect the magnitude of the anomaly as well.

Several pendulum measurements show that the Moon must be about 4000 km above the horizontal ecliptic in order to have maximum strength to accelerate the Earth enough upwards so that a significant Allais Effect can be measured.

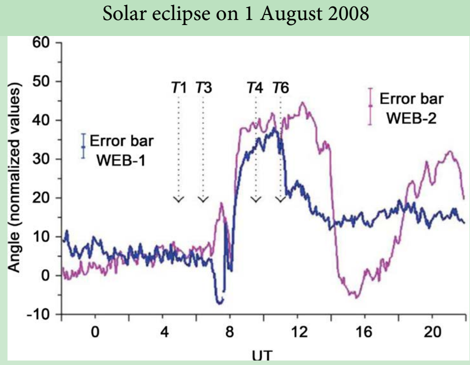
The perfect position (P5) is where the maximum gravity anomaly is possible to measure. Any position lower or higher than this will weaken the anomaly. Because the Moon inclines or declines 0.72˚ (within 24 hours) relative to the perfect position, this can naturally seriously weaken the anomaly. Based on all the measurement experience we have, there is reason to conclude that it must be possible to trace a tiny rest of the anomaly even within a range of 24 hours.

The reason why we believe the anomaly is short-lived is that this is only true seen from a local perspective, not seen from an overall perspective. This claim is already supported by evidence.

The measurement 1 of August 2008 that took place in Ukraine and Romania (**Figures 9-12**) was far away from the shadow of the Moon. The onset of the Allais Effect anomaly was several hours delayed.

The anomaly was measured several hours after the Solar Eclipse was over. The cause of this delay is that testing bodies A1 and B1 (in Romania and Ukraine) should first be brought to the perfect position (to position A2 and B2) by the rotation. The effect on testing body B1 was more delayed than the effect on testing body A, simply because the distance to travel from B1 to B2 was larger than the distance between A1 and A2.

Solar eclipse on 1 August 2008



T1: Start of partial eclipse
T3: Start of central eclipse
T4: End of central eclipse
T6: End of partial eclipse

Figure 9. Chart of the recorded variations of the azimuths of the torsion balance pointers. Source [1]. The anomaly was delayed that day.

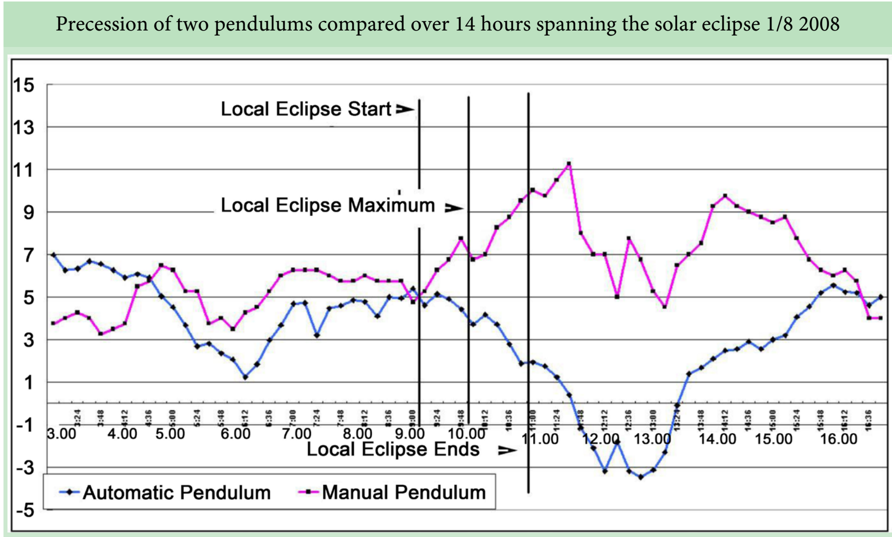


Figure 10. Behavior of automatic and manual ball-borne pendulums during the eclipse. Source [2].

Also this measurement shows several hours of delay compared to many other anomalies.

Figure 11. The Allais Effect is a long-lived anomaly.

There is no doubt that if there would have been a measurement taken **between** A1 and A2 (**Figure 11**), these too would have revealed the anomaly—however, not as delayed as in Ukraine and Romania.

Due to the fact that no worldwide coordinated research has ever been executed, we can only guess what would have happened if measurements had also been taken further west—in Northern Italy, France, a few places in the Atlantic sea and in America.

Would the anomaly also be measured here as well?

The answer is yes—but the answer is also that the maximum effect would only have been measured one place on earth. If worldwide measurement would have taken place, it would have revealed an anomaly increasing a half day before a solar eclipse, and gradually fading out a half day.

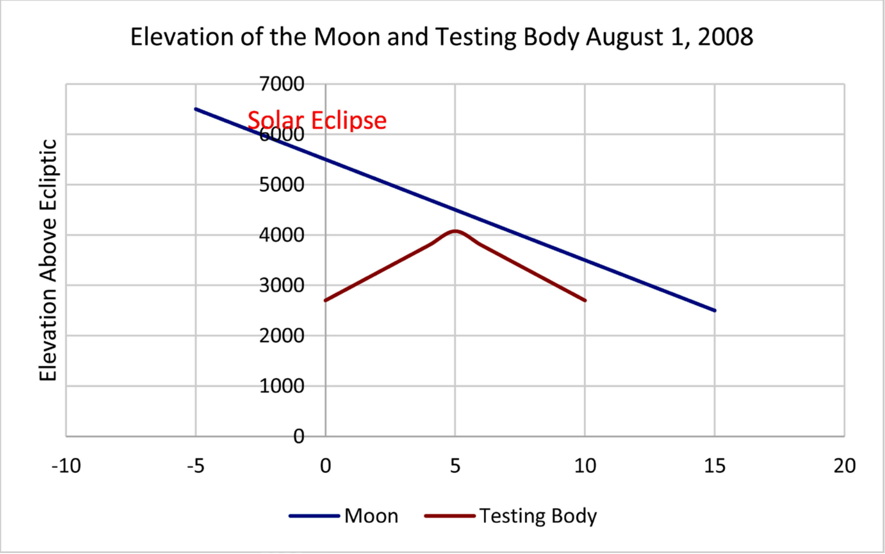


Figure 12. This graph shows that the vertical pull in the testing body was larger than the exposed DFA, when the solar eclipse took place. First few hours later the opposite began to happen and the anomaly could be measured. This explains the delayed anomaly measurement August 1. 2008. The gravimeter measurement experiment will not experience similar problems, because of the constant higher elevation of the testing body.

[1] Goodey, T.J., Pugach, A.F., Olenici, D. (2010) Correlated Anomalous Effects Observed during the August 1st 2008 Solar Eclipse. *Journal of Advanced Research in Physics*, **1**, Article ID: 021007.

[2] Pugach, A.F. and Olenici, D. (2009) Observations of Correlated Behavior of Two Light Torsion Balances and a Paraconical Pendulum in Separate Locations during the Solar Eclipse of January 26th, 2009. *Advances in Astronomy*, **2012**, Article ID 263818.