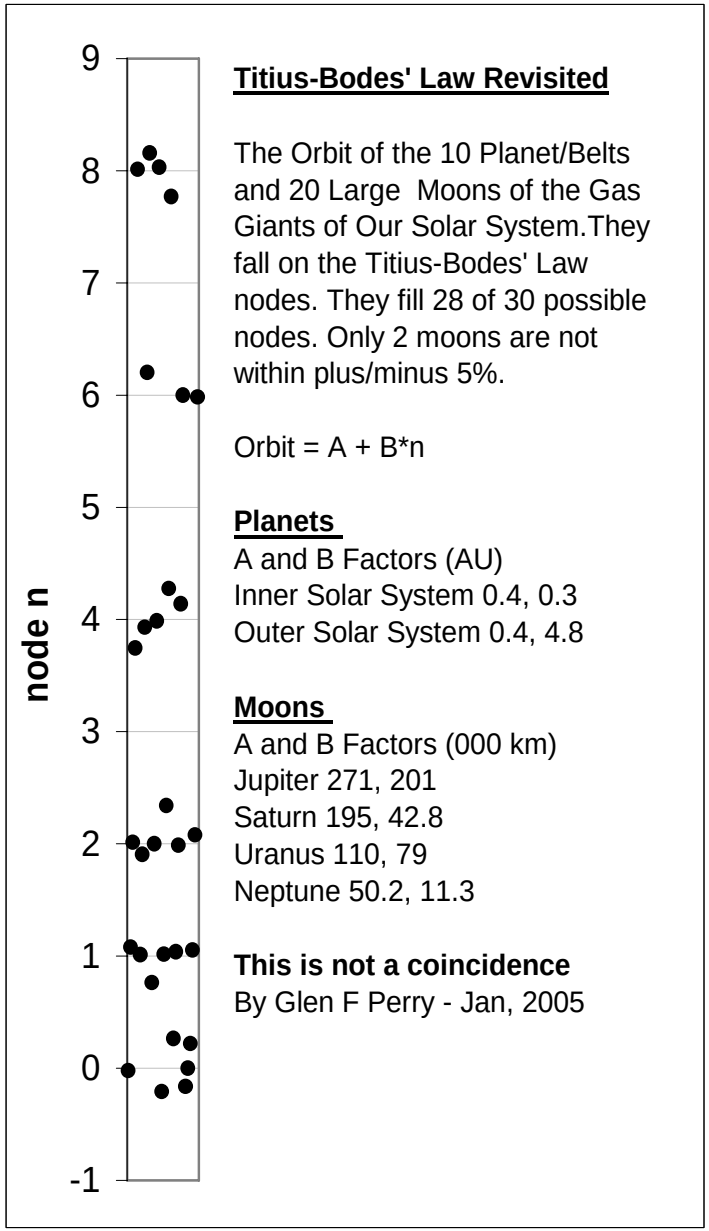

Finding the Lost Chord – by Glen F Perry

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Appendix # 5 - The Gravity / Pendulum / Eclipse Phenomenon

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Premise

There have been reports of gravitational anomalies at the time of solar eclipses, as measured with pendulums and gravimeters, going back almost 50 years. The anomalies vary in their magnitude, timing and effect such that there is a lack of understanding as to the cause, and in fact, a disagreement as to whether anything of significance is actually being measured. As an eclipse is ultimately a solar phenomenon, and gravity change is another way of saying there is a change in momentum, it is possible that the experimental data might contain evidence for the force(s) discussed herein.

Discussion

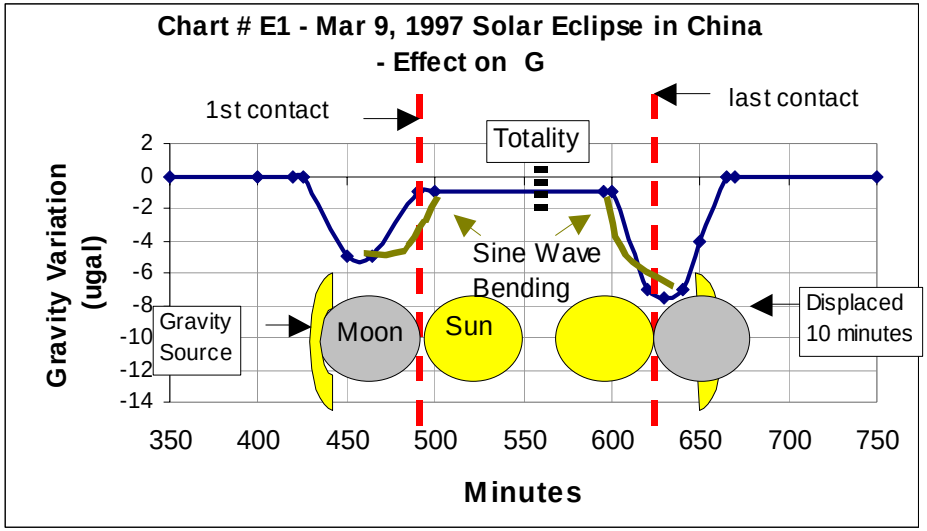
"In 1954, Maurice Allais reported that a Foucault pendulum exhibited peculiar movements at the time of a solar eclipse. During the eclipse, the pendulum took an unexpected turn, changing its angle of rotation by 13.5 degrees (see chart # E3). Both before and after the eclipse, the pendulum experienced normal rotation (Foucault effect of 0.19 degrees/minute). Allais got similar results when he later repeated the experiment during a solar eclipse in 1959 at 2 different locations."

(http://science.nasa.gov/newhome/headlines/ast06aug99_1.htm)

The observation of anomalies during eclipses have been seen by others, but the type of anomaly, as well as the measuring device, has differed between observations, and even with the same instruments. Romanian scientists observed a change in rotation axis with a similar pendulum device in 1961. Finish scientists did not see it on one expedition in 1990, but then confirmed the anomaly on a second expedition in 1991. Harvard scientists Saxl and Allen observed a change in the time period of torsion pendulums of about 0.04% in 1970, and a similar effect has been studied at Harvard for well on 35 years. A gravimeter study in India in 1995 confirmed the detection of a very small, but significant, signal anomaly coinciding with an eclipse. The sensitivity of detection has now become fine enough with gravimeters that this result has been confirmed by a study out of China in 1997, published in 2000, where results were obtained with great accuracy and the elimination of all known variables, and is shown in Chart # E1. A co-ordinated world wide effort in the 1999 Austrian eclipse saw intriguing results from two different spacially separated observatories, confirming that it was no local coincidence. The Chinese results are described at:

www.**eclipse**2006.boun.edu.tr/sss/paper03.pdf. Austria appears at http://science.nasa.gov/newhome/headlines/ast12oct99_1.htm

This Chinese study detected a sharp pulse of gravitational force reduction of 5 x 10^-8 m/sec squared on approach (0.5 millionth of a percent of total gravity or 5 ugal), but prior to transit of the eclipse, and 7 ugal after the point of last transit. There was a small persistent change during the actual transit of the eclipse, the gravimeter read at about 1 – 2 ugal below the baseline. Each pulse was about 1 hour in length, with a non-symmetrical wave such that the peak occurred at about 25 minutes (approaching) or 35 minutes (departing) of a 60- minute wave interval. The first pulse began and was finished just by the time the moon contacted the sun on arrival at first contact. The last pulse began about 10 minutes before the moon departed entirely (10 minutes before last contact) and then lasted for another 50 minutes, with the peak about 25 minutes after last contact. There are several interesting features of the two pulses shown in Chart # E1:



a) The two spikes have different amplitude; one is 70% of the other.
b) In order to explain the offset between the centre of the eclipse and the centre of the two pulses, assuming that the pulse is created by the disk of the moon passing a line in space, then the location of this line is about 1.2 MM km away from the surface of the sun on the approaching side, and about 1 MM km away from the sun

on the departure side. The sun itself is 1.4 MM km wide, placing these lines well out in the corona. At this region, temperature is a few million degrees but the number of particles is approaching the emptiness of space. This 0.2 MM km difference is equivalent to the 10-minute difference, on either side of the sun.
c) Each pulse is not symmetrical. The approaching pulse has a fast fall and a slow rise; the receding pulse has a slow fall and a fast rise. However, they appear to be mirror symmetrical with each other. Both pulses exhibit a sine wave bending effect towards the centre of the Sun or towards totality. This appears to be a combination of two effects, one a basic symmetrical pulse, and the second, a result of the motion of the Moon towards or away from the centre of the Sun during the 60-minute duration of the pulse.
d) Aside from this 10-minute or 0.2 MM km difference between the two pulses in relation to the actual eclipse, they probably would represent a phenomena that orbits or surrounds the sun on both sides. If this is so, then the distance should not be different if symmetry is to be maintained, thus the explanation would depend on the time difference in the time taken for the signal to reach the Earth, which is about 8 minutes at the speed of light.

In summary, there are two different effects, the first is a large pulse like displacement somewhat symmetrically displaced on either side of the Sun, the second is a smaller constant background effect during the time of actual transit of 1-2 ugal reduction in gravity.

Of the several reports of gravity anomalies under eclipses, the only other reports of a similar sensitivity, with the same equipment, with the same Chinese team doing the measuring, are the Zambian 2001 eclipse and the South Australian 2002 eclipse. Of these, I have seen only two graphs that have been published, with no description or writings. This author can only make sense of the Zambian results, as they are somewhat similar to the Chinese results, showing a double pulse (but at an 80-minute interval) and the signature wave bending. The Zambia eclipse also saw a large pulse of 6 ugal, but only one large one, and it was timed such that the pulse ended just as totality began, thus was about 60 minutes behind the Chinese pulse in relation to totality. As opposed to a coronal coverage in China, the Moon covered one side of the solar surface during this pulse. The pulse saw a major sine wave bending effect towards the Sun centre, at least five times as great as the Chinese pulses. There were also many smaller disturbances throughout the other half of the eclipse, as the Moon was still in front of the Sun, seen after the single large pulse had died. A smaller second pulse of about 1.2 ugal was seen leading right up to the totality, displaced 80 minutes from the large pulse.

For the best overview of the phenomena, see “A review of conventional explanations of anomalous observations during solar eclipses”, Chris P. Duif (2004). The Foucault pendulums changing their axis measure a change in the direction of inertia. In Paris in 1954, this started at first contact and occurred during transit, but it ended about ½ way through the eclipse after 80 minutes. The Oct 2, 1959 eclipse measurement by Alais (at 2 separate locations) showed a smaller axis change but it lasted longer, throughout the entire eclipse or about 180 minutes. The torsion pendulum changing its period represents a change or reduction in the magnitude of the gravitational force over a period of time. The Saxl and Allen eclipse from 1970 in the USA showed that a force was initiated at the start of the eclipse but terminated about 80 – 100 minutes later. With the pendulums, the change begins at first contact and continues for either 80 or 180 minutes, while with the gravimeters it occurs before and after or randomly displaced around the eclipse. These results imply at least two different effects. One effect appears to originate from a large pulse that occurs in the corona or right when the two objects touch (with a 10-minute differential and a 30% difference in magnitude from the two respective sides), and a smaller effect originates from the solar surface, which affects both magnitude and direction of the average force on the pendulum or gravimeter, and can be seen in the Chinese and Zambian gravimeter experiments as background change when the pulse has died, or in the Australian eclipse throughout the total eclipse. It appears that there is a separate pulse after 80 minutes that sometimes returns the pendulum to its original path. One or both of these effects is responsible for changing the direction of inertia for the duration of the axis change on the Foucault pendulum. In 1952 in Paris, as the Sun was directly overhead, and the pendulum initially swung from 175 to 185 degrees, it appears to have encountered a right angle force from the 18:00 o’clock position.

The change in time period of a pendulum of 0.04% on 29.581 seconds is very small in relation to the earth’s gravity, which the time period of the pendulum measures. As the change is a very small percentage of the total gravity, it is not a very sensitive measure of the magnitude of this force, which is in the millionths of gravity range and is not constant, but quite randomly displaced through time. However the axis of a Foucault pendulum does not see the Earth’s gravity, only it’s inertial mass against a fixed background of stars. It is unaffected by the Earth’s gravity, thus would be much more sensitive to any remaining forces. If one assumes that some balance of forces must then emanate from this fixed background to keep the pendulum in line normally, then the sun and moon normally shield equal parts of it from the Earth, in a line to each object from the Earth. This shielding results in a slightly different gravitational pull from the Sun or the Moon on the Earth than what is caused purely by the gravitational force, however it would be buried, both in a magnitude and in a directionality sense, in the larger gravity force.

This could possibly be related to the force discovered by the Pioneer spacecraft as reported below from:

http://spaceprojects.arc.nasa.gov/Space_Projects/pioneer/PNStat.html

"ANOMALOUS GRAVITATIONAL FORCE? A discussion of this phenomenon appears in the 4 October 1999 issue of Newsweek magazine (See also the December 1998 issue of Scientific American.) The mystery of the tiny unexplained acceleration towards the sun in the motion of the Pioneer 10, Pioneer 11 and Ulysses spacecraft remains unexplained. A team of planetary scientists and physicists led by John Anderson (Pioneer 10 Principal Investigator for Celestial Mechanics) has identified a tiny unexplained acceleration towards the sun in the motion of the Pioneer 10, Pioneer 11, and Ulysses spacecraft. The anomalous acceleration - about 10 billion times smaller than the acceleration we feel from Earth's gravitational pull - was identified after detailed analyses of radio data from the spacecraft. A variety of possible causes were considered including: perturbations from the gravitational attraction of planets and smaller bodies in the solar system; radiation pressure, the tiny transfer of momentum when photons impact the spacecraft; general relativity; interactions between the solar wind and the spacecraft; possible corruption to the radio Doppler data; wobbles and other changes in Earth's rotation; out gassing or thermal radiation from the spacecraft; and the possible influence of non-ordinary or dark matter. After exhausting the list of explanations deemed most plausible, the researchers examined possible modification to the force of gravity as explained by Newton's law with the sun being the dominant gravitational force. "Clearly, more analysis, observation, and theoretical work are called for," the researchers concluded. The scientists expect the explanation when found will involve conventional physics."

An honest statement would be that there is a large element of faith in the answer to this question as shown below from:
http://www.space.com/scienceastronomy/mystery_monday_041018.html

"Though tiny, the signal is clear, other scientists agree. Despite 11 years of devotion to the mystery, Turyshev is the first to admit that the "most obvious explanation" would be an unknown onboard effect. Perhaps excessive internal heat or leaks of propulsion gas are providing a wee bit of thrust that adds up over the years. Yet despite a lot of testing, "no unambiguous, onboard systematic problem has been discovered," he said. "This inability to explain the anomalous acceleration of the Pioneer spacecraft with conventional physics has contributed to the growing discussion about its origin."

The Foucault pendulum does not see the Earth gravity force, only this background, as shielded by certain large astronomical objects. The background's contribution to the total force is illustrated by the axis change in the pendulum when the shielding reduces from 2 objects to 1 object by the eclipse. More of the background gets through while the gravitational force stays the same. The axis of Alais pendulum swung from about 175 to 185 degrees at the start of the eclipse. About 80 minutes later it swung back, long before the eclipse was finished. Review of the Sun/Moon location at the time of the eclipse shows that it is in a direct line to the Milky Way for 3 of the 5 eclipses reported, and displaced by about 20 degrees for the other two.

As the net gravity reduces when more of the background gets through, it appears to be an attractive force that emanates from the background down onto the object in question. If the sun and moon shielding represented a force that was balanced against forces from all directions, when the two became one, the balance of force on the pendulum would change, and its axis would change. In effect, the fixed background (of forces) changes. Normally, one would expect that this orientation would continue until the sun and moon separated again, at which time the orientation would revert to the original. With Alais, the movement back after 80 minutes implies a second effect. One would also expect to see a small increase in the time period of the pendulum as the solar contribution disappeared and gravity reduced, even though the period is primarily dictated by the Earth's gravity. The ratio of the solar contribution to the total fixed background is represented by 13 degrees of rotation at the time of the actual Alais measurement, and the pendulum was pointing at about 175 degrees at the time. This is quite a large effect. The literature does not say if a similar pendulum, with a different axis of rotation, was deflected by the same amount or a different amount. The degree of deflection, in the above model, should depend on the orientation of the initial axis to the sun. If the pendulum pointed at the sun, it does not appear possible that the axis could change by turning the sun off, whereas a pendulum 90 degrees to the sun would see the greatest change. In Paris, as the eclipse was near noon, the Sun would be directly overhead. This is therefore unexplained and somehow implies a force at right angles to the direction of the Sun/Moon.

One explanation of the two spikes from the coronal area as shown in Chart # E1, and their magnitude and time difference, might be rationalized if one assumed that something that rotated around the sun at the speed of light such as a huge EMF field in the corona emitted its force in the direction of motion only and this force, possibly like gravity, travelled much faster than the speed of light. The side of the sun rotating towards the earth would send this force directly and it would arrive immediately. The side rotating away from the earth would send the force in a direction away from the earth. If the generation of this force in the corona also creates a reflected wave in the plasma, which manifests as an energy wave that travels on reflection back towards the earth, but at the speed of light, and at a somewhat reduced magnitude because of the transformation and reflection, then the results can at least be addressed and might explain the observation.

The problems with this theory are many, but mostly that none of these conjectures has ever been actually seen and probably can't be tested. Without something like this, the 10 minute / 0.2 MM km difference will remain troubling.

The following paper appeared in 2003 by one of the authors of the Chinese eclipse paper that described a mass movement of air effect that could cause the observed phenomena.

" Allais gravity and pendulum effects during solar eclipses explained", Van Flandern T, Yang XS, PHYSICAL REVIEW D Publisher: AMERICAN PHYSICAL SOC, ONE PHYSICS ELLIPSE, COLLEGE PK, MD 20740-3844 USA IDS Number:
646BV ISSN: 0556-2821 - 27 January 2003
Abstract:
Gravitational and other anomalies seen repeatedly in connection with solar eclipses have led to speculation about a possible gravitational shielding effect as the cause. Here we show that an unusual phenomenon that occurs only during solar eclipses, rapid air mass movement for the bulk of the atmosphere above normal cloud levels, appears to be a sufficient explanation for both the magnitude and behaviour of the anomaly previously reported in these pages."

If this air-mass theory were the case, then the results could at least be directionally explained, although any relationship between different events would be more difficult to explain.

A counter paper had appeared earlier by the Chinese authors that had argued against any environmental cause, although they had not included the air-mass effect. http://home.t01.itscom.net/allais/blackprior/wang/yangwang.pdf

The results of the other eclipses can be seen at the following: http://home.t01.itscom.net/allais/blackprior/tang/tangtalk.pdf

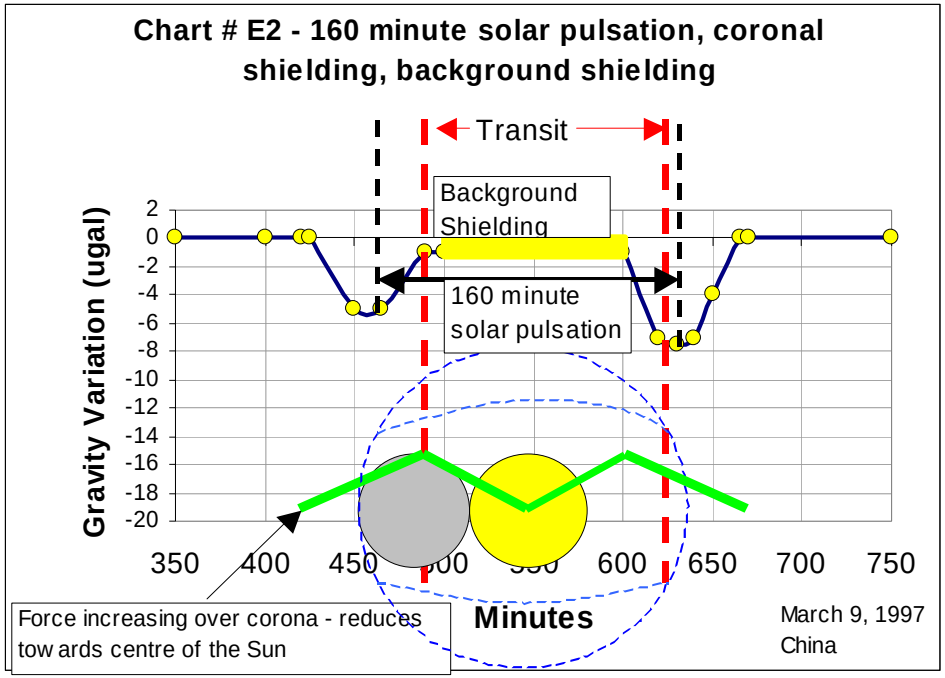
As concluded by Duif in his 2004 paper, no conventional theory can account for these results, including seismic disturbance, air mass density, tilt due to temperature change or atmospheric loading, change to the geomagnetic field or instrument error. The above-described time shifted theory to explain the non-symmetrical double Chinese pulse is also not very satisfying. In the additional reports from the Chinese team on 2 more eclipses, Zambia in 2001 and Australia in 2002, the results are very apparent, astounding, different from each other, and currently totally inexplicable. Yet there is a clear order and pattern to these results that speak to a larger cause related to order, not chaos. Duif identifies this apparent commonality between the various eclipses in his paper by analyzing the differentials of the movement change to identify the onset of acceleration (or of the force) and the various eclipses look somewhat similar.

Theory

In an effort to find this larger cause that creates order out of the chaos, the solar pulsation was brought into the equation, as eclipses are a solar phenomenon, and these gravity perturbations are spikes or pulses, oddly reminiscent of other things seen throughout this analysis.

What results is a different explanation for this phenomenon, and one that yields several irrefutable, testable experiments to either confirm or deny the presence of a new force, and the data most likely already exists in the record. It is based on trying to provide an explanation for the timing of the pulse and the 10-minute discrepancy, and not requiring time shifted effects or the non-spherical shape around the Sun.

The explanation is that the timing of the pulses has nothing to do with the actual eclipse. It is instead the timing of a pulse of force emanating from the Sun or from the background, at regular intervals. The eclipse timing and the pulse timing are not correlated in any fashion but are independent events. The eclipse just allows one to observe the pulse **if** it occurs at certain times, primarily near the first contact or last contact, when the edges of the two objects are in line (or the corona's of the two objects are occluding). There is also a smaller background effect that lasts throughout the eclipse, and can be seen when not overwhelmed by the much larger pulse.

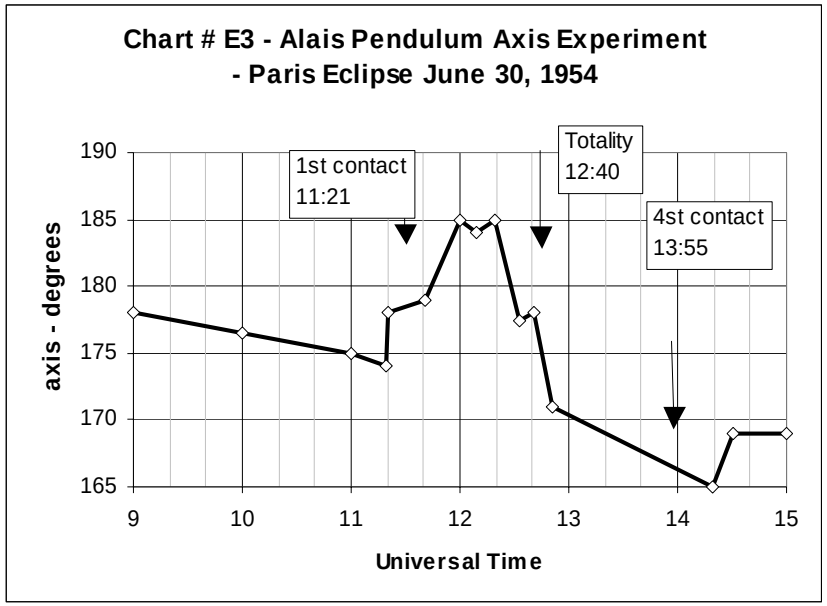


As near as I can deduce from the graphs published for the Chinese eclipse, the time difference between the two pulses measures about 168 minutes from start to start, or end to end, of the two respective pulses, with a scatter of plus / minus 10

minutes in the measured data. This could be the same solar pulsation that has appeared in the orbits and rotation rate analysis. It would be shielded by the moon/sun combination in a slightly different geometry (the 10-minutes) on approach than on leaving, this could be the cause of the slight magnitude difference between the two pulses as it changes in magnitude depending on the part of the Sun that is occluded at the exact moment of the pulse. A coronal source is implied, as the effect occurs both before and after the eclipse, but not during. The source of the pulsation is larger than the Sun's surface to cause this effect, with an overall diameter equal to about 3 – 4 times the diameter of the Sun. The cut-off beyond this distance can be seen with the Zambian pulse, where only one large pulse occurs. In the Zambian eclipse, the time interval 160 minutes previous to the large pulse saw a lot of new disturbance in the gravity field, but no large pulse, as the Moon was too far out in the corona at the time.

This could be the same wave that Mr Thacker integrated from 3 months of Potsdam gravimeter data. Somehow, the moon's blocking action allowed the Chinese team to observe it directly underneath the eclipse, in an unshielded sense. It is also possible to look at all the data in a more complex fashion. If one assumes that, normally, the forces arrive from all directions simultaneously on the Earth in an equal amount, then our inability to see these forces normally is more easily explained. Our observations of gravity changes could be caused by a force from the opposite side that is not balanced for a brief period, thus making an attractive force look repulsive. It could also be a result of a shrinking or pulsing of the Earth as it is a much more sensitive instrument than the gravimeter. This might imply that areas outside the eclipse do not feel the pulse, and it is the difference over the eclipse area that is observed. These various models and ideas will ultimately yield to a thorough analysis of the eclipse data, with a background pulse as the starting point.

The strange results of eclipse tests done with pendulums (or lack thereof of reproducible results) show that the axis change coincides with the onset of the actual eclipse. However, Alais results actually showed the effect started at first contact but lasted only for 60 - 90 minutes, well before the eclipse had ended. This theory predicts that the onset occurred with the eclipse and the background shielding change, but the redirection after 80 minutes was the effect of the pulse, or a harmonic resonance of 160 minutes. The change at the onset of the eclipse could be explained by a second effect recorded in the Chinese eclipse. It showed a slight 1 – 2 ugal reduction in gravity over the complete eclipse. This effect is masked by the pulses, but can be clearly seen in the interval between pulses. This might be an attractive force emanating from the cosmic background, where all the force is equally balanced on the Earth normally. Objects occlude this force based on surface area, resulting in slightly more gravity under an object, but the impact would be felt in a line of sight to the object from the Earth, and thus its effect would be no different (and much smaller) than the force of gravity from that object. The measured gravity is then actually the sum of the gravity force (large attractive) and the background force (small opposite). When two objects occlude as in an eclipse, the gravitational force doesn't change, but the background shielding reduces in half for about 2 hours. As more of the background force gets through the reduced shielding, it causes the reduced effect of gravity seen over this interval. Thus it is an attractive force from above.



Occlusion actually increases the amount of this force that strikes an object. This would cause the torsion pendulum experiments to see a slightly longer period, which is seen. As the extra force appears from a specific direction (whether it is the solar pulsation shielding or the background un-shielding), it is similar to an immediate change in the fixed background (as defined in the Foucault pendulum experiment). The inertia of the pendulum, which according to Mach's Principle is aligned with the stars or the fixed background, thus realigns immediately to the new background. The change in force would not realign until the next pulse, or until the eclipse ends. As a typical eclipse is shorter than the length of two solar pulsations, most would get only one pulse, while some like the Chinese eclipse would observe two pulses. For those with a double pulse, they would both occur in the coronal zone (as the 1997 eclipse). A single pulse would be timed closer to the centre of the Sun. The March 9, 1997 eclipse was fortuitous in that the mid-point between pulses was close enough to the mid-point of the eclipse, that two readily measurable pulses were seen.

The Chinese team has continued making measurements under eclipses, most recently Zambia on June 2, 2001 and Australia on Dec 4, 2002. Both of these results, as well as the Alais result in 1954, the Indian eclipse in 1995 and the Chinese result in 1997, provide some data to identify a specific point in time for the peak or the onset of the event's largest spike, and it's duration, although the results are difficult to interpret as the last two experiments have not been written up in detail. The results are shown at their web site and should be viewed at the following. I recommend any reader who has made it this far to visit and review the data for themselves.

http://home.t01.itscom.net/allais/blackprior/tang/tangtalk.pdf

The actual peaks of the Chinese eclipse pulses are broadened because of the general noise in the data, implying an error of about plus or minus 10 minutes in the timing of the actual peak. The Alais pendulum result on June 30, 1954 shows a sharp deflection at 11:20 at the onset of the eclipse and a gradual adjustment backwards between at 12:20 and 12:50 (UT), a difference of about 60 - 90 minutes, near totality. The Zambian eclipse on June 21, 2001 shows a 6-ugal signal at 14:00 (UT), with a smaller pulse at 12:40 and a small disturbance at the onset of the eclipse around 11:20. These results are not written up or explained in any paper and the chart record is terminated in the graph presented by the Chinese team. The Australian eclipse on Dec 4, 2002 shows only a single large peak at about 20:20 local time (I believe this is South Australia time which would be 11 hours greater than UT, so is about 9:20 UT). The time taken for this peak to grow from a 0 ugal baseline to its peak at 1.5 ugal and back again is about 160 minutes. This result is different from the other results in that no pulse is observed, only a gradual build-up and decline. Again, this result is not written up anywhere so interpretation is difficult. The Chinese eclipse on Mar 9, 1997 showed the two peaks, at 7:40 and 10:20 local time, a difference of 170 minutes. The Chinese local time is 9 hours larger than UT, so these effects occurred at 22:40 and 1:20 (UT). The Indian eclipse showed a deviation at 6:30, which equates to 1:00 UT with a 5.5 hour difference. It returned back in about 20 minutes at 1:20 UT.

A very simple model was built to test the idea that the wave bending is caused purely by the Moon's motion during the 60-minute length of the pulse, and a changing magnitude of the pulse that is being shielded over this traverse. This might indicate the relative magnitudes coming from the corona and the surface, at least in a line of sight case. The four waves (2 from China, 2 from Zambia) were curve fit to a model starting with a sine wave for the shape of the basic pulse and multiplying this by a factor that changes linearly with time over the 60 minutes. For a wave with a lagging bend, the multiplier reduces over time, and the actual sine wave is greater than the observed pulse. For a wave with a leading bend, the multiplier increases over time, and the actual sine wave is less than the observed pulse. This is shown in Charts # E4 – E7, where the axis is inverted showing a negative change as a positive change for ease of representation.

The symmetry between the two Chinese pulses becomes more apparent. A sine wave of about magnitude 6.5 ugal, moderated by the Moon's motion to 65% over the approach, and 126% over the departure, would yield both observed pulses. The Zambian pulse at 960 minutes has a counterpart about 80 minutes earlier at 880 minutes. It is a very small pulse, very near the totality, but because it also illustrates the sine wave bending effect, it is included. The difference between the Zambian pulse (with the Moon covering the solar surface) and the 2 Chinese pulses (with the Moon covering the corona) can be seen by the vastly larger bending effect on the Zambian eclipse pulse when over the solar surface. This would seem to imply, as the Chinese pulses imply, that the largest force is contained within the corona, with a relatively small force from the surface. This also illustrates why one should not use the difference between the apparent peaks of the pulses to establish the absolute time of the peak. It is suggested that the midway point between the initiation and the end of the pulse would be a more accurate measure, as any M value times zero is zero. The waves are actually more triangular shaped than sine waves. However, this is beyond the accuracy of the data, so will await further tests.

One comparison to understand the source of the pulse would be if these 5 events (Paris, China, Zambia, Australia, India) were still in phase with each other after 50 years. The following is a summary of the timing of the main gravity deviations from the 5 experiments, correlated to Universal Time starting at midnight. Any resonance with 40, 80 or 160 minutes would be apparent regardless of the day of the eclipse as the Earth's 24 hours divides equally into all 3 numbers. Those times in resonance with 40 minutes are highlighted in bold. The Paris re-alignment between 740 and 770 minutes could average to 760 minutes, making every event except the onset of the Indian deviation in resonance with 40 minutes. In addition to the basic timing, the location against the fixed background that is pointed to from a line drawn between the Sun/Moon/Earth at the time of the eclipse is listed. The eclipses marked with a * point towards the Milky Way. If motion relative to the sun is important, China and India were in the morning, Paris was at noon, Zambia was in the afternoon, and Australia was in the evening.

Paris *	**680**, 740-770 minutes (Decl 23, R.A.18 hr 35 min)
India	60, **80** minutes (Decl 11, R.A. 1 hr 52 min)
China	**1360** and 90 minutes (Decl 4.5, R.A. 11 hr 18 min)
Zambia *	**680, 760** and **840** minutes (Decl – 23.5, R.A. 18 hr)
Australia *	**560** minutes (Decl 22, R.A. 4 hr 40 min)

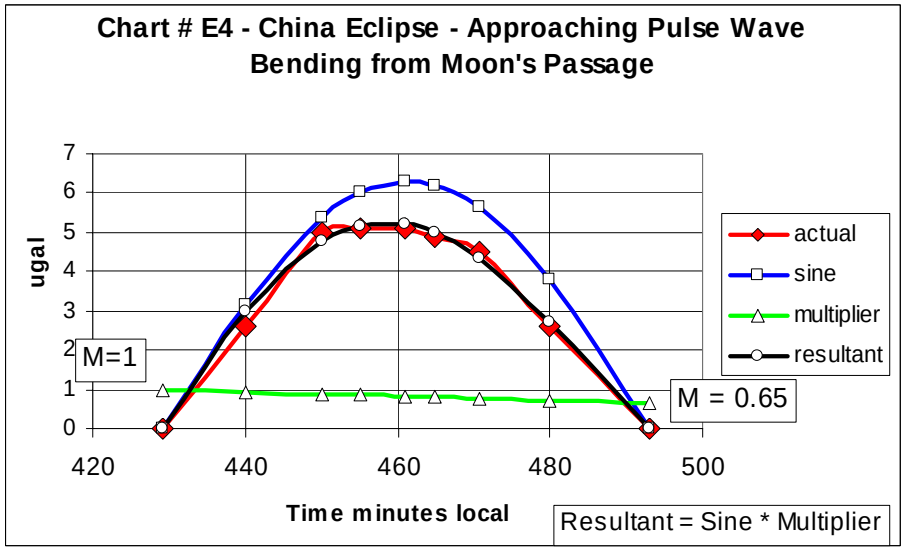


Chart # E4 - China Eclipse - Approaching Pulse Wave Bending from Moon's Passage
ugal
7
6
5
4
3
2
1
0
420
440
460
480
500
Time minutes local
M=1
M = 0.65
actual
sine
multiplier
resultant
Resultant = Sine * Multiplier

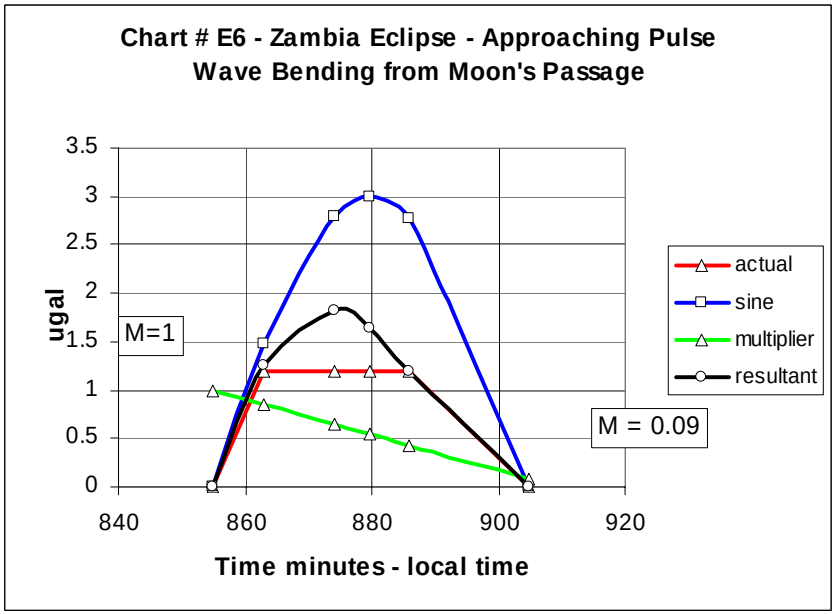


Chart # E6 - Zambia Eclipse - Approaching Pulse Wave Bending from Moon's Passage
ugal
3.5
3
2.5
2
1.5
1
0.5
0
840
860
880
900
920
Time minutes - local time
M=1
M = 0.09
actual
sine
multiplier
resultant

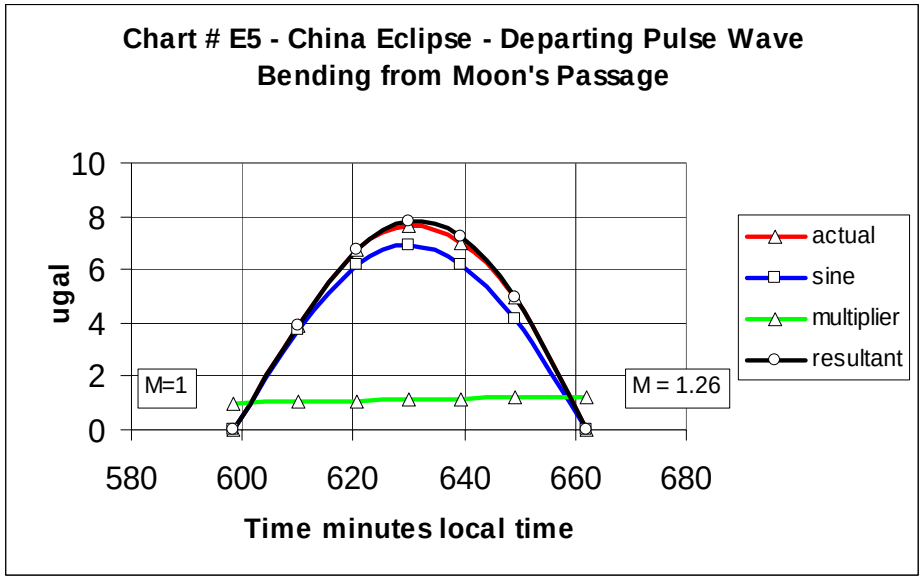


Chart # E5 - China Eclipse - Departing Pulse Wave Bending from Moon's Passage
ugal
10
8
6
4
2
0
580
600
620
640
660
680
Time minutes local time
M=1
M = 1.26
actual
sine
multiplier
resultant

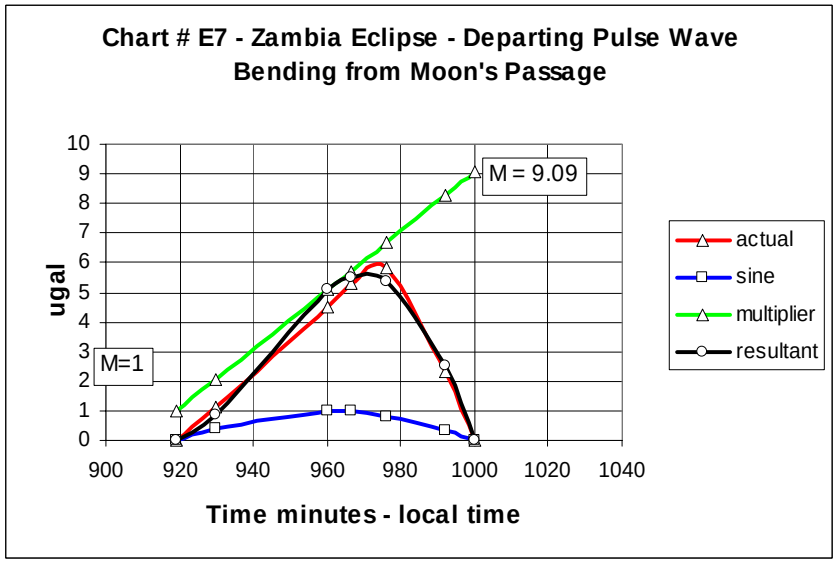
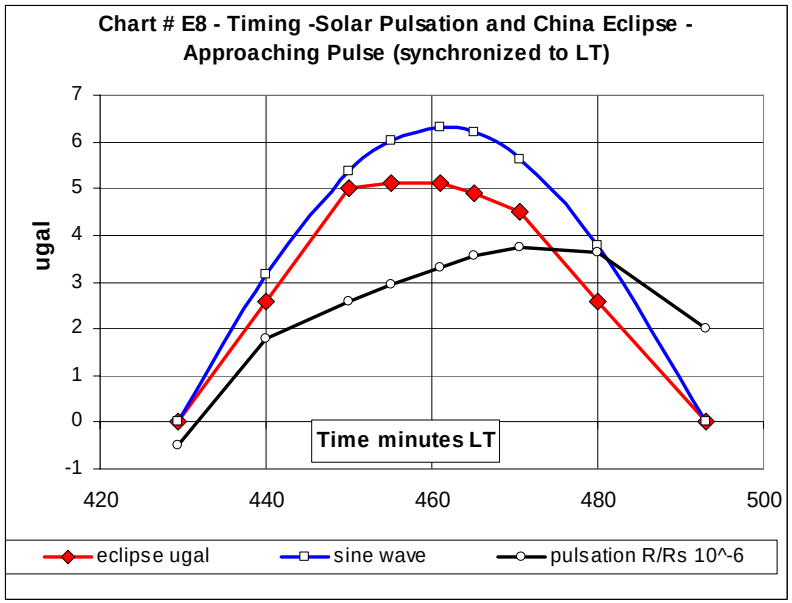


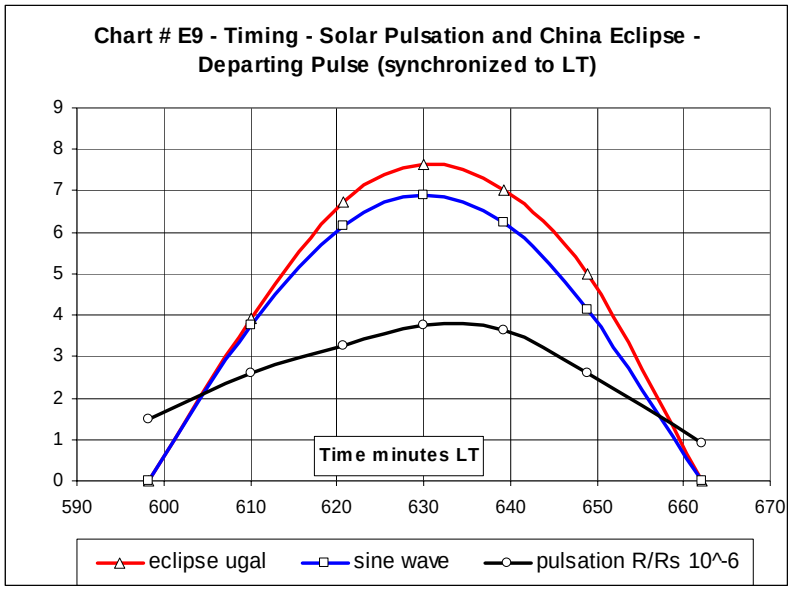
Chart # E7 - Zambia Eclipse - Departing Pulse Wave Bending from Moon's Passage
ugal
10
9
8
7
6
5
4
3
2
1
0
900
920
940
960
980
1000
1020
1040
Time minutes - local time
M=1
M = 9.09
actual
sine
multiplier
resultant

The correlation does not appear to be random. This author feels somewhat uncomfortable with these results as the actual readings have an error band and I had no access to the raw data, only the published charts (which carry little explanation or description and some of it in Chinese). In addition, the correlation between UT and local time is not stated but had to be inferred, and the peak of the pulse could be disguised by the movement of the Moon across the Sun and the sine wave bending. However, the results are similar to Thacker's analysis of the Potsdam data. He went looking for the 160-minute wave and he found a 40-minute cycle instead, with also partial evidence for the 160-minute cycle. Any conclusion will require more data for confirmation but the idea that the eclipse pulse has nothing to do with the timing of the actual eclipse appears to be a workable hypothesis.

If the solar pulsation actually occurred at the same time as the eclipse pulses, this would be strong evidence of a link between the two observations. Appendix VIII analyzes the absolute timing of the 160-minute solar pulsation, the 40-minute Earth based gravity pulsation and the timing of these 5 eclipse events. The solar pulsation of 159.9655 minutes (Dr Kotov's most recent estimate) appears to coincide with the 6 eclipse events (2 for China), with a probability of 0.12% of occurring randomly. In particular, the China eclipse event showing a double pulse coincides within 3 – 6 % or 5 - 10 minutes of the timing of the maximum radius of the solar pulse, and the Australian pulse is within 1%. The shape of the double Chinese pulse is somewhat similar to the shape of this solar pulsation. This is shown in detail in Charts # E-8 and #E-9. The other noticeable comparison is between the magnitude of axis deviation of the Alais-Paris event in Chart # E-3, and the shape of the velocity profile of the solar pulsation, shown in Chart # H-21. They both show a pattern of significant deviations from a smooth sinusoidal type curve, with the deviations appearing to follow a pattern of 40 or 80-minute intervals between deviation events (rapid change, start or stop of an effect).

The random nature of the advance in the 159.9655-minute series across all the years (115 minutes/year advance vs Earth synodic year), and their occurrence close to the eclipse events is hard to believe on chance alone. The eclipse timings were chosen a good 3 months before Dr Kotov provided me with the absolute timing of the solar pulsation and the comparison was then made. It is hoped that the coordinated worldwide study undertaken by numerous institutions in 1999 on synchronous measurements under the same eclipse, using different devices at different locations, will be released some time in the near future. I found over 20 web site references announcing the multi-institution study, I've seen only a few scattered references announcing any result. In particular, two German observatories saw similar axis change in the pendulum as was seen by Alais. Apparently the NASA effort to coordinate these studies fell apart when the senior researcher left the project. It's been close to 6 years now. The Chinese published their results from the 1997 eclipse as a flash communication in Physical Review in 2000. The greatest issue in the paper was eliminating other possible causes for the observed gravity anomaly, but as they stated, these other causes were well known and corrected for. The experimental results at least provide sufficient accuracy that the several different effects described above can easily be seen, once one knows where to look. Rather than debate the accuracy of the testing, or whether air mass movement is responsible, a synchronicity as described herein should be easy to confirm through further tests. It would clearly point to an external origin for the anomaly and would be unequivocal in its findings. It would prove that our current theo





Conclusion

Given the limited data available, the theory that the pulses seen under eclipses are caused by the timing of a solar or background pulsation and not the timing of the eclipse, is supported by the evidence, or at least is not yet refuted. The pulse timing, the impact of the transiting Moon on the pulse magnitude based on location relative to the Sun, and the wave bending are all explained by this theory. There is evidence of two forces, a pulse from the solar corona and a steady force from the surface/background. The background force of about 1.5 ugal is seen when the timing of the pulse is such that the two objects totally occlude each other and the main pulse is not seen, as with the Australian eclipse or in the 160 minute interval between the two Chinese eclipse pulses.

What this discussion highlights is that the effect can change under the eclipse depending on the axis or orientation of the pendulum, the timing of the eclipse and its relationship to the moon/sun geometry at the specific time of the solar pulse, the portion of the Sun (in relation to the centre) that the eclipse traverses, and can possibly change depending on the location of the experiment on the Earth, and might be seen in areas where there is a partial eclipse to a lesser degree. It might depend on the alignment with the Milky Way. The experiment might also be measuring several different effects of the same force, one emanating from the corona, one emanating from the solar surface, and one emanating from the cosmic background. One force might be attractive and the other repulsive. Different measuring devices will thus yield different, and unique, results. The key would be that they all yield results of some kind. There was a very interesting series of results from the various institutions regarding the 1999 Austria/german eclipse study because of all these factors, with torsion and Foccault pendulums both being displaced, but a complete analysis is still to be forthcoming of the related timing of all the events. There is `100% certainty that an effect, or series of effects, occurs under eclipses. Gravimeter analysis, on a consistent and continuous basis based on current technology, should be able to resolve these forces, and thus help unravel the mystery.

There is not that much absolutely new science out there that could be accessed as easily and cheaply as running some eclipse experiments. To understand why the inexpensive experiments described above are not being done consistently, disbelief is all too easy for a sceptical group like physicists (and rightly so as their's is a long history of fraud, charlatans and just plain old misunderstanding). The key is to dispel the myth that the 160 minute pulsation does not exist. It has been questioned historically and is still not fully accepted, as shown in:

http://www.creationresearch.org/crsq/articles/26/26_2/sun.html

"However, the 160 minute cycle is not universally acknowledged. Woodard and Hudson (1983) and van der Raay (1980) have not found it, and Hudson has recently said, "Following its initial apparition . . . the 160 minute oscillation has remained elusive both theoretically and also observationally" (Hudson, 1987). The following papers form the majority who do accept the 160 minute oscillations and attempt to explain it will aid those interested in pursuing this new science of "helioseismology" and its implications: Severny *et al*., 1976; Hill *et al*., 1986; Grec *et al*., 1980; Isaak, 1982; Claverie *et al*., 1981; Delache and Scherer, 1983; Scherer and Wilcox, 1983; Ando, 1986."

This analysis concludes elsewhere that the 160 and 40-minute gravity pulsations do exist, there is no question of this, not unless Mr Thacker's gravimeter and Dr. Kotov's telescope are illusion or fraud. Knowing that they exist then logically leads to the idea that somehow these pulses are amplified at the point of occlusion or conjunction of two objects such as during a solar eclipse. This would help to explain the mysterious Venus:Earth phase lock. Synchronicity of these pulsed events with other pulsed events would prove this theory conclusively. Unfortunately, this analysis only directionally supports this contention, primarily because of the lack of sufficient data, not because the early results are negative. In fact, the opposite has occured, the highly improbable early results actually provide conditional support for the idea.

So I conclude that extrapolation of our current theories about gravity observed within the solar system to the universe at large is missing some key features. Thus, conclusions drawn from this extrapolation are questionable. This implies that understanding the cause of the eclipse phenomenon should take on a priority at least equal to the efforts to find theoretical entities such as dark matter, as the measurements are relatively easy to make, have a fairly low cost and the results will be very definitive. Debating the underlying cause is pointless until enough accurate data has been gathered and disseminated, especially when the reality can be checked so easily. Yet we seem to persist in these endless debates proposing some new way that conventional physics can survive the solution, and avoiding any direct confrontation with actual experimental results. It is not a goal of scientific inquiry to preserve the status quo at all costs. It is a goal to always challenge everything, including the status quo. The eclipse debate says something very worrying about the focus of scientific inquiry at the start of the 21st century.

Finding The Lost Chord

by Glen F Perry 2005

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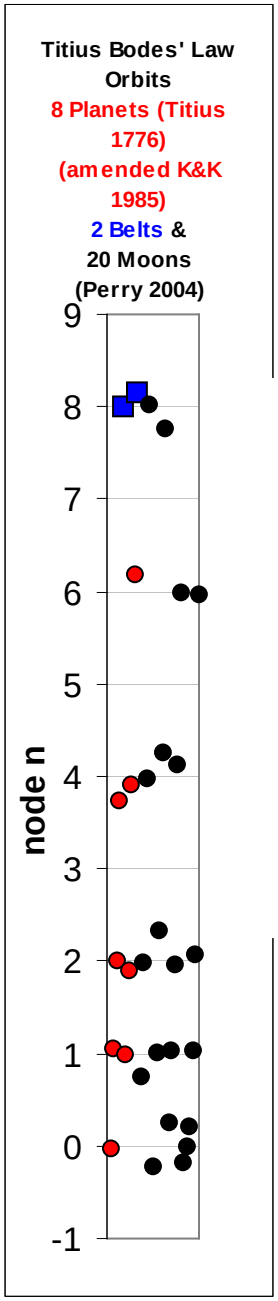
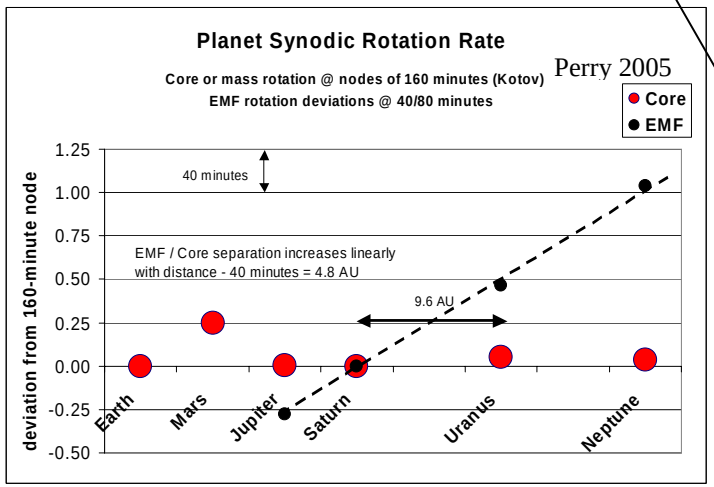
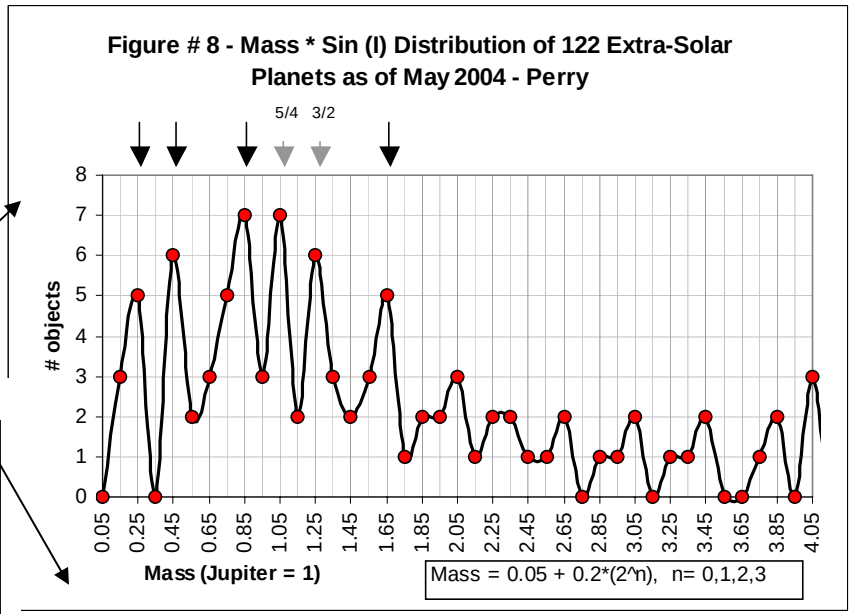
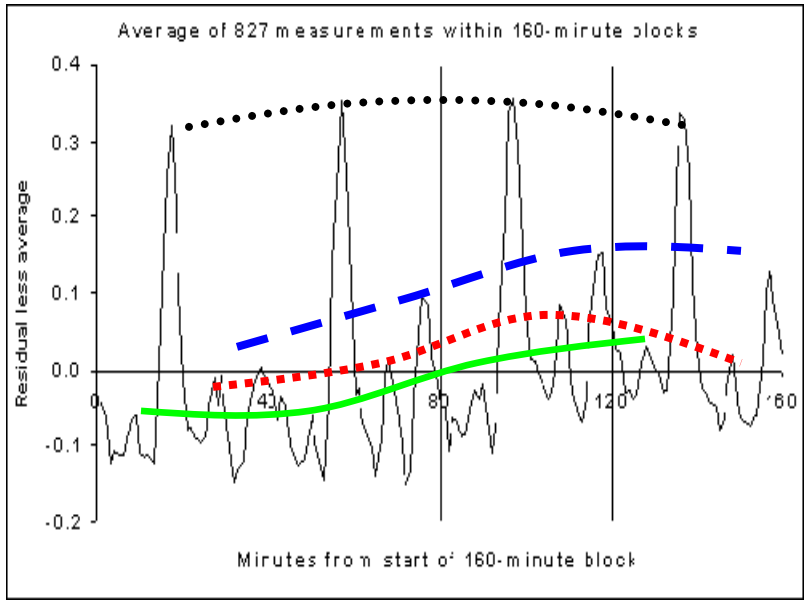






40 / 160-minute Gravity Fluctuations - Jerrold Thacker 1992 from Potsdam Superconducting Gravimeter



KK Hypothesis	Solar Pulsation Seen
- 160 minute round trip to Saturn at speed = c (Kotov & Kuichmy 1985) – Neptune is 3rd fundamental	P(0)= 160.0101 min. P(1)=159.9655 min. (K&K 1974 to 2006) visible light, IR, magnetic field and solar surface

Coincidence or Resonance?