

Research Article

Earth-Moon Relationship and the Astronomical Implications of Tidal Wave Arrival Times

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Abstract

The pursuit for the essence of the LIGO's philosophy in the laser-based detection of a transient gravitational wave signal, the Signal, dated September 14, 2015 at 09:50:45 UTC and the pursuit to sift the September 14, 2015 at 09:50:45 UTC out of the LIGO's event as well as the pursuit for mathematical models to predict tidal wave arrival times via Moon's equinox times and vice versa brought mathematical models to calculate the Moon's equinox. The Moon's equinox time matches the tidal wave arrival time transition time, the TWATTT. The TWATTT will produce the TWATTT response time, the TWATTTT, upon offsetting the former forward with a location dependent constant, the LDC, which closes the chain of variables for the prediction of tidal wave arrival times. The TWATTT shall exactly dovetail with the Earth's equinox time when Earth, the Sun and the Moon shall happen to be in a vertical conjunction in the 2D plane. Support to discuss the results was drawn chiefly from the principles of radiant cold-heat transfer, from the principle of distance-based decaying of resources as well as from the principles of laser interferometry. The following results added to the cascade of results: the timing for the Signal's detection, the September 14, 2015 at 09:50:45 UTC, coincides with a TWATTT, coincides with the date time for a new moon, coincides with the 01st Tishri 5776 on the Jewish calendar and coincides with the date time for a transient low air pressure at the LIGO labs due to the TWATTT-amplified tidal effect which should not be confused for the Signal. The Signal cannot travel through the Cosmos through vacuum for lacking the support of a sustainable continuous tension between Earth and a black hole, for the lack of fuel. The Signal as well as the Signal laser hybrid cannot be detected on laser interferometry for the hybrid's lack of digitally detectable holes, for being analog in its nature. The LIGO's strategy to house the detection facilities in a tunnel for the Signal's delicacy contradicts the LIGO's assumption as to the Signal's strength to overcome the atmospheric resistance to reach the LIGO Labs. The LIGO's detection facility has no control experiment in terms of a synchronized parallel running tunnel. The LIGO's project is actually seeking to automate the capturing of tidal wave arrival times.

Keywords

Black Hole, LIGO, Laser Interferometry, Gravitational Wave, Earth, Moon, Tanzania, Climate Change

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1. Background, Methods and Approaches

With a diameter of 3,474 km (2,159 mi), the Moon is orbiting Earth at an average distance of 384,400 km (238,900 mi) [12]; the Moon is Earth's sole natural satellite [12]. The Moon is tidally locked, that is, the Moon's axial period of rotation is equal to the Moon's orbital period is equal to 29.530589 Earth days to the effect that the Moon portrays the same face when viewed from Earth [12].

The Moon is being associated with ancient time keeping on etymological grounds that the noun moon has been associated with the words "mēnsis" and "mēneses" which may be referring to the verb "measure" of time [12].

It is the orbiting of the Moon which co-occasions the Sun or the Moon eclipse when the Moon crosses the Earth's ecliptic respectively at a new or full moon [12].

Earth and the Moon are orbiting to reach their closets positions respectively to the Sun and to Earth at their Equinoxes [12].

Earth and the Moon (as well as the Sun) are said to be exerting gravitational attraction on each other under which the attraction is slightly of a greater extent on the sides closest to each other to result in tidal forces [6, 7, 12, 24]. Ocean tides are the most widely experienced result of this phenomenon [3, 8, 10, 12].

Tidal wave arrival times at the Australian Tonga meteorological observation point, the Tonga Point, uniquely exhibit a transition moment which is shared on the date time scale with the Moon's Equinox moment to the effect that the former can be used to predict the date time of the later and vice versa [8].

On September 14, 2015 at 09:50:45 UTC, LIGO (for Laser Interferometer Gravitational-Wave Observatory) claimed to have detected a transient gravitational-wave signal, the Signal, simultaneously at LIGO Hanford and at LIGO Livingston respectively in the US states of Washington and Louisiana [1, 2, 12]. The Signal is reported to originate from a binary black hole collision and merger [1, 2].

LIGO describes the Signal to be capable of being reflected on a mirror as well as to be ultra-sensitive to atmospheric pressure fluctuations, among other things [1, 2].

The LIGO's detection facility for the Signal essentially works on the principle of laser beam interference hence its name "laser interferometer" [1, 2]. The facility is housed in a L-shaped tunnel to deter atmospheric pressure interferences [1, 2]. Jonathan Amos, the BBC science correspondent wrote: "Ligo fires lasers into long, L-shaped tunnels; weak GWs should disturb the light". He wrote further: "Both Ligo labs work by splitting a light beam and sending the two halves down separate, 4 km-long, evacuated tunnels.". He wrote further: "The beams are bounced back and forth by mirrors before being recombined at their starting point and sent to detectors. If the delicate gravitational waves pass through the set-up, the laser light should show evidence of having been ever so slightly disturbed - either lengthened or shortened.". The setup of the LIGO's detection facility for the Wave is

portrayed in Figure 1 below [1, 12]:

1st illustration: a beam splitter (green line) splits coherent light (from the white box) into two beams which reflect off the mirrors (cyan oblongs); only one outgoing and reflected beam in each arm is shown, and separated for clarity. The reflected beams recombine and an interference pattern is detected (purple circle).

2nd illustration: a gravitational wave passing over the left arm (yellow) changes in length and thus the interference pattern.

Both LIGO Hanford, Washington as well as LIGO Livingston, Louisiana is located just a few km away respectively from the shores of the Pacific as well as from the Atlantic Ocean as shown in Figures 1 and 2 below [12].

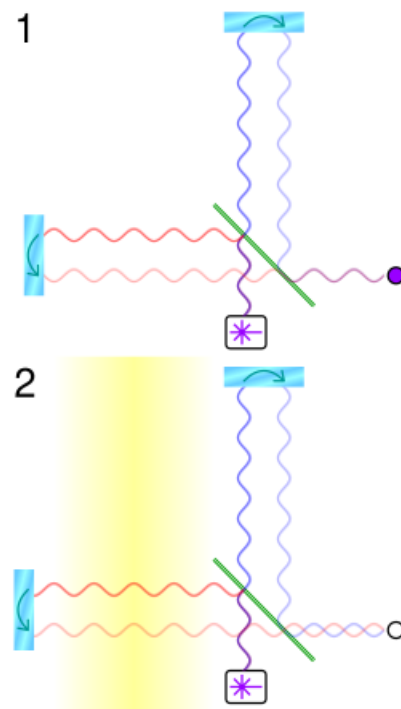


Figure 1. Simplified operation of a gravitational wave observatory [12].

Because of the Signal's ultra-sensitivity to interferences by ultra-weak atmospheric pressure fluctuations, because of the Signal's doubtful transit through the Earth's atmosphere on atmospheric resistance to reach the LIGO's facilities, because of the Signal's doubtful strength to interfere a laser beam for the Signal's detection, because the September 14, 2015 falls on a new moon closer to the Earth's September Equinox for September 20, 2015, because tidal wave arrival times for the Tonga Point can be used to determine the date time for the Moon's Equinox, because of LIGO's contradiction in the principle of detecting the Signal, this study was conceived to draw the essence of the LIGO's philosophy in the laser-based detection of the Signal and to sift the September 14, 2015 at 09:50:45 UTC for the Moon's Equinox from the LIGO's

hoaxing.

An extra mile for this study is to lay down the foundation basis for a relatively smarter technique of predicting tidal wave arrival times upon the Moon's Equinox date times upon the mathematical models to be put together herein below.



Figure 2. Livingston, Louisiana on the map [12].



Figure 3. Hanford, Washington on the map [12].

2. Angular Displacement of Earth and the Moon

To start with, the orbital period of Earth and that of the Moon is given in Table 1.

Table 1. Orbital period for Earth and the Moon [12].

Object	Synodic orbital period in Earth days	Sidereal orbital period in Earth days
Earth	not available	365.256 363 004
the Moon	29.530 589	not available

Since Earth completes one revolution to complete 360 angular degrees in 365.256363004 Earth days, the absolute angular displacement of Earth as a function of Earth days in respect of the Earth's motion around the Sun can well be expressed as follows:

$$\theta(d) = \left(\frac{360(d - d_{REF})}{365.256363004} \right) + \delta \quad (1)$$

Where: $\theta(d)$ is Earth's absolute angular displacement in angular degrees as a function of Earth days relative to the horizontal line cutting through the aphelion and the perihelion reckoning since the reference perihelion.

δ is the phase angle in angular degrees relative to the Earth's absolute angular displacement θ ; it is equal to zero.

d is the absolute number of Earth days since the reference perihelion.

d_{REF} is the absolute reference number of Earth days at the reference perihelion – the absolute zero; it is set to be zero.

Before determining the Moon's absolute angular displacement as a function of Earth days in respect of the Moon's motion around Earth, there are two plausible assumptions to be made here that: the Sun, Earth and the Moon shall align themselves in a 3D conjunction at the event of a Lunar or Sun eclipse respectively at a full moon or new moon, otherwise the conjunction is said to be a 2D conjunction - a non-eclipse conjunction. Secondly, Earth and the Moon shall share the relative angular displacement at conjunctions. The Absolute angular displacement is greater or equal to 360 angular degrees whereas relative angular displacement is always less than 360 angular degrees.

Noteworthy, there is nothing wrong to use equation (1) as it is but in order to win computational advantages on cross-platform computing resources, it is strongly recommended to use the Julian date TT [12] in the equations of this sort. Secondly, it is more credible to use data out of a 3D conjunction in the forthcoming equation against data out of a 2D conjunction on the simple reason that a 3D conjunction has been proved to have happened at that particular moment.

Now, out of equation (1), the relative angular displacement of Earth at the next 3D conjunction is given by:

$$\phi_{Earth} = \left(\frac{360(d_{3DC} - d_{REF})}{365.256363004} \right) \bmod 360 \quad (2)$$

Where d_{3DC} is the absolute number of Earth days at a 3D conjunction reckoning since the reference perihelion.

ϕ_{Earth} is the relative angular displacement of Earth in angular degrees at the synchronization 3D conjunction.

The best abbreviation for ϕ_{Earth} is ϕ_{Synch} for the synchronization angle, for the relative angular displacement of the Moon in angular degrees at the synchronization 3D conjunction as it becomes apparent in the following paragraph. It follows therefore that:

$$\phi_{Synch} = \left(\frac{360(d_{3DC} - d_{REF})}{365.256363004} \right) \bmod 360 \quad (3)$$

It is noteworthy to say that d_{REF} must be a mathematically convenient point such that d_{3DC} shall follow soon after but not too late; the value of the synchronization angle out of equation (3) may happen to be zero when the two determinant variables thereof fall on the same point on the time scale.

Since the Moon completes one revolution to complete 360 angular degrees in 29.530589 Earth days, since it is convenient to track the motion of the Moon around Earth with a new relative variable in terms of Earth days, then the synchronization angle out of equation (3) must first be converted into Earth days as follows:

$$d_{Synch} = \phi_{Synch} \left(\frac{29.530589}{360} \right) \quad (4)$$

Where d_{Synch} is the relative number of Earth days at the synchronization 3D conjunction reckoning since the Moon's position at the previous perigee, since the relative reference.

It follows that:

$$d_{REF2} = d_{3DC} - d_{Synch} \quad (5)$$

Where d_{REF2} is the relative number of Earth days at a reference perigee – the relative zero. It is set to be zero.

In analogy to equation (1), the Moon's absolute angular displacement as a function of Earth days in respect of the Moon's motion around Earth is given by:

$$\beta(d_{REL}) = \left(\frac{360(d_{REL} - d_{REF2})}{29.530589} \right) + 0 \quad (6)$$

Where $\beta(d_{REL})$ is the absolute angular displacement of the Moon in angular degrees as a function of Earth days relative to the horizontal line cutting through the apogee and the perigee reckoning since the reference perigee.

d_{REL} is relative number of Earth days reckoning since the reference perigee.

3. Moon's Equinox, Apogee and Perigee Moments

Now, proceeding from equation (6), the intermediate solution which is being sought is the Moon's equinox time determinant angle α in angular degrees which when added to the Moon's relative angular displacement out of equation (6) the answer is 90 or 270 angular degrees respectively for the Moon's position in the 1st or 3rd quarter of the Moon's ecliptic. Thus:

$$\alpha = \left(90 - \left(\left(\frac{360(d_{REL} - d_{REF2})}{29.530589} \right) \bmod (360) \right) \right) \quad (7)$$

$$\alpha = \left(270 - \left(\left(\frac{360(d_{REL} - d_{REF2})}{29.530589} \right) \bmod (360) \right) \right) \quad (8)$$

For the Moon's position in the 2nd and 4th quarter of the Moon's ecliptic the determinant angle α is gotten via subtraction. So:

$$\alpha = \left(\left(\left(\frac{360(d_{REL} - d_{REF2})}{29.530589} \right) \bmod (360) \right) - 90 \right) \quad (9)$$

$$\alpha = \left(\left(\left(\frac{360(d_{REL} - d_{REF2})}{29.530589} \right) \bmod (360) \right) - 270 \right) \quad (10)$$

In analogy to the procedure to derive equations (7), (8), (9) and (10) hereinabove to derive the Moon's equinox time determinant angle α , the Moon's apogee as well as the Moon's perigee time determinant angle κ can be derived as follows to produce equations (11), (12), (13) and (14) respectively for the Moon's position in the 1st, 3rd, 2nd and 4th quarter of the Moon's ecliptic:

$$\kappa = \left(\left(\left(\frac{360(d_{REL} - d_{REF2})}{29.530589} \right) \bmod (360) \right) - 0 \right) \quad (11)$$

$$\kappa = \left(\left(\left(\frac{360(d_{REL} - d_{REF2})}{29.530589} \right) \bmod (360) \right) - 180 \right) \quad (12)$$

$$\kappa = \left(180 - \left(\left(\frac{360(d_{REL} - d_{REF2})}{29.530589} \right) \bmod (360) \right) \right) \quad (13)$$

$$\kappa = \left(360 - \left(\left(\frac{360(d_{REL} - d_{REF2})}{29.530589} \right) \bmod (360) \right) \right) \quad (14)$$

When the Moon's equinox time determinant angle α is known, the Moon's equinox time for the Moon's position in the 1st and 3rd quarter of the Moon's ecliptic, the Moon's equinox time ahead, the META, can be determined as follows:

$$d_{META} = \left(\left(\left(\frac{360(d_{REL} - d_{REF2})}{29.530589} \right) + \alpha \right) \left(\frac{29.530589}{360} \right) \right) \quad (15)$$

Where d_{META} is the relative number of Earth days at the Moon's equinox time ahead reckoning since the reference perigee.

In analogy to equation (15), the Moon's equinox time for the Moon's position in the 2nd and 4th quarter of the Moon's ecliptic, the Moon's equinox time back, the METB, can be determined as follows:

$$d_{METB} = \left(\left(\left(\frac{360(d_{REL} - d_{REF2})}{29.530589} \right) - \alpha \right) \left(\frac{29.530589}{360} \right) \right) \quad (16)$$

Where d_{METB} is the relative number of Earth days at the Moon's equinox time back reckoning since the reference perigee.

Analogously, the Moon's gee time for the Moon's position in the 1st and 3rd quarter of the Moon's ecliptic, the Moon's gee time back, the MGTB, is given by:

$$d_{MGTB} = \left(\left(\left(\frac{360(d_{REL} - d_{REF2})}{29.530589} \right) - \kappa \right) \left(\frac{29.530589}{360} \right) \right) \quad (17)$$

Where d_{MGTB} is the relative number of Earth days at the Moon's gee time back reckoning since the reference perigee.

Analogously, the Moon's gee time for the Moon's position in the 2nd and 4th quarter of the Moon's ecliptic, the Moon's gee time ahead, the MGTA, is given by:

$$d_{MGTA} = \left(\left(\left(\frac{360(d_{REL} - d_{REF2})}{29.530589} \right) + \kappa \right) \left(\frac{29.530589}{360} \right) \right) \quad (18)$$

Where d_{MGMA} is the relative number of Earth days at the Moon's gee moment ahead reckoning since the reference perigee.

Since the tidal wave arrival time at the Tonga Point increases progressively by one hour between two consecutive arrival times except at the tidal wave arrival time transition time response time, the TWATTTT, when the difference is 13 hours between two consecutive arrival times [8], since the occurrence of the TWATTTT progressively shifts from the

date time corresponding to $\frac{1}{4}$ or $\frac{3}{4}$ phase of the moon towards the date time corresponding to a new or full moon as Earth moves from the perihelion or aphelion towards the Earth's equinoxes and vice versa [8], the proper jargon for META and METB - in the context of tidal wave arrival time - is TWATTTT (for Tidal Wave Arrival Time Transition Time).

Since the TWATTTT is a result out of a response, then the TWATTTT shall be a result of offsetting the TWATTTT backwards by a location dependent constant, the LDC. In terms of equations (15) and (16) the translation is as follows:

$$d_{TWATTTT} = d_{TWATTT} + LDC \quad (19)$$

Where $d_{TWATTTT}$ is the relative number of Earth days at the event of the TWATTTT reckoning since the reference perigee.

LDC is the location dependent constant in Earth days.

d_{TWATTT} is the relative number of Earth days at the event of the TWATTT reckoning since the reference perigee.

In terms of the Julian date TT equation (19) can be translated as follows:

$$TWATTTT = d_{TWATTTT} + REF2JDN \quad (20)$$

Where REF2JDN is the Julian day number at the reference perigee, at the relative zero.

The derivation of equations (1) to (20) assumed the primary reference point to be the perihelion to the effect that the synchronization 3D conjunction must be a Moon eclipse at a full moon for the secondary reference to be the perigee. Therefore, for the synchronization 3D conjunction to be a Sun eclipse at a new moon the secondary reference must be the apogee.

In analogy to equation (20), the results out of equations (15), (16), (17) and (18) can be converted to the META, METB, MGTB and MGTA respectively by adding the REF2JDN thereto. A smarter computing resource will output its results in UTC out of the META, METB, MGTB and MGTA by converting the Julian date TT into UTC [5, 11, 12, 23].

Because of the convenience to compute the META, METB, TWATTT, MGTB and MGTA by using conjunctions' times as input data, a smarter computing resource also will have one module to output intermediary new moon times (the new moon calculator, the NMC [5, 11, 23]) and another module to output intermediary full moon times (the full moon calculator, the FMC [5, 11, 23]) such that the umbrella module shall call in the alternating fashion the NMC and the FMC for outputs which in turn shall subsequently be fed into these equations to produce the desired result in a chronological order.

It is of practical computational relevance also to note the sources of the reference perihelion in Table 2 herein below.

Table 2. Dates and local standard times of the Earth's Equinoxes and Solstices for year 2012 with a local time zone offset of UT-05:00 [4].

Event	Julian date TT	Date DoW Time
March Equinox	2456006.71867528	2012-Mar-20 05:15 Tue TT 2012-Mar-20 00:14 Tue Loc Std Time
June Solstice	2456099.46521443	2012-Jun-20 23:10 Wed TT 2012-Jun-20 18:09 Wed Loc Std Time
September Equinox	2456193.11816031	2012-Sep-22 14:50 Sat TT 2012-Sep-22 09:49 Sat Loc Std Time
December Solstice	2456282.96716528	2012-Dec-21 11:13 Fri TT Fri Loc Std Time

The relevant data in respect of the reference eclipse of the Sun as well as the Moon is provided below in Table 3 and Table 4.

Table 3. Relevant eclipse data [12].

Date time	Event type
2011 June 15 at 21:45 UTC Tbilisi, Georgia.	eclipse of the Moon (total)
2012 Nov 13 at 22:11:48 UTC Mount Carbine, Queensland	eclipse of the Sun (total)

Table 4. Relevant Moon eclipse data [9].

Date time	Event type
15 June 2011 20:14 TD	total+ Saros 130
15 April 2014 07:47 TD	total Saros 122

4. Results and Discussion

A TWATTT shall dovetail with the Earth's equinox time when that particular TWATTT shall be associated with a vertical conjunction in the 2D plane because the relative angular displacement for both Earth as well as the Moon at that particular event shall be 90 or 270 angular degrees.

The LIGO's claim for the detection of the Signal dated September 14, 2015 at 09:50:45 UTC is devoid of merit on six main grounds:

- 1) The September 14, 2015 at 09:50:45 UTC falls at a new moon, falls on the 01st Tishri 5776 on the Jewish calendar [5, 11, 23], falls at the event of the Moon's equinox time (a. k. a. the TWATTT) to the effect that a transient low pressure zone reigned at both of the LIGO's detection facility at Hanford and Livingston which should not be taken for the Signal.
- 2) The Signal swept just once to mean that it is a discrete signal (a. k. a. a step signal) to the effect that it had been

travelling without a fuel through the Cosmos, through vacuum without a supporting continuous tension to contradict the principle of distance-based decaying of resources [6, 7]. Under the principle of distance-based decaying of resources, for the Signal's velocity to have remained perpetual, the decay factor in equation (21) must be 1 which is categorically untrue; otherwise the velocity of the Signal dies as the distance $\mathcal{E}$ approaches infinity [6, 7], so:

$$\mathcal{G}_{Signal}(\mathcal{E}) = \mathcal{G}_0 \left(\frac{\mathcal{E}_0}{\mathcal{E}} \right)^\eta \quad (21)$$

Where $\mathcal{G}_{Signal}(\mathcal{E})$ is the Signal's velocity in meter per second as a function of $\mathcal{E}$, the distance away from the Signal's source.

$\mathcal{G}_0$ is the Signal's initial velocity in meter per second.

$\mathcal{E}_0$ is the Signal's velocity decay pause in meter.

$\mathcal{E}$ is the distance away from the Signal's source in meter

– must be greater than $\mathcal{E}_0$.

η is a dimensionless power to the Signal's decay factor.

- 3) Since the nature of the Signal's generation is a once-off collision event, a quake-like event, [1], it can be ruled out that the Signal had a support of a continuous tension which just ended immediately after the Signal's detection upon a switch off on the source side. Whereas radiant heat travels through vacuum on a continuous support of the heat pump thereof [13-21], the Signal requires a medium for its transmission to the effect that the Signal's transmission must have failed upon encountering vacuum in the Cosmos.
- 4) The Signal cannot cross the Earth's atmosphere to reach the LIGO's detection facility on the LIGO's contradiction to house the Signal's detection facility in a tunnel on the Signal's delicacy [2]. It cannot be figured out how is

a weak signal of that sort going to obstruct a laser beam for its detection.

- 5) The LIGO's innovation falls in a contradiction because whereas LIGO portrays a digital detection technology for the Signal on laser interferometry on one hand, in a recourse, LIGO implemented an analog-based intermediary technology of superimposing the Signal with a laser beam into a signal laser hybrid, the Hybrid, upon which the Signal should be detected [1, 12]. Whereas the detection technology for the Signal on the Hybrid remains unknown, on laser interferometry however, a bitwise generation of the laser beam is a requirement on the generator's side whereas the detection thereof on the receiver side is based on the availability of digitally detectable bit holes in the beam which should be a result of the obstructed bits in the course of the beam's transit between the generator and the receiver [22]. To support laser interferometry, in simple terms, the Signal must be constituted of particles [22].

- 6) The LIGO's results out of the laser detector are equally devoid of merit because the 8 km distance between the generator and the detector is quite sufficient to explain for the laser to decay according to the principle of distance-based decaying of resources as explained for the Signal's decay in paragraph (2) above. The LIGO's explanation as to the technique of refueling the laser between the generator and the detector is devoid of merit.

The following points will amplify the "want of merit" for the LIGO's innovation in respect of the Signal's detection:

- 1) The implementation of the mirroring of the laser beam to realize the laser beam U-turn requires the beam's angle of incidence to be known. An angle of incidence which is greater than 45 degrees offers little prospects of success for such a U-turn.
- 2) The Signal's entry point into the L-shaped tunnel is not clearly described - whether vertically from above or sideways horizontally via a pinhole crossing through the tunnel?
- 3) Unless housed in two separate parallel-running L-shaped tunnels unless equipped with a synchronized laser generator and detector, the two detection facilities portrayed in Figure 1 should produce the same result on the point that if housed in the same tunnel the Signal shall most likely interfere both beams in a similar way to the effect that the experiment would run without a control experiment.

- 4) The input laser for laser interferometry must be in detectable bits to the effect that detectable holes must be built-in [22]. The danger of lengthening the laser bits in the Hybrid as thought by the LIGO [2] is that the laser's inherent holes may get sealed to end up with a completely useless junk.

Since the LIGO's facilities open to the shore of the Atlantic Ocean and to the shore of the Pacific Ocean respectively at LIGO Livingston and at LIGO Hanford [12], the LIGO's ambition is to automate the capturing of tidal wave arrival times.

5. Conclusion

The Moon's equinox time matches the tidal wave arrival time transition time, the TWATTT. The TWATTT shall produce the TWATTT response time, the TWATTTT, upon offsetting the former forward with a location dependent constant, the LDC, which closes the chain of the essential variables for the prediction of tidal wave arrival times.

The TWATTT shall exactly dovetail with the Earth's equinox time when Earth, the Sun and the Moon shall happen to be in a vertical conjunction in the 2D plane.

The timing for the Signal's detection, the September 14, 2015 at 09:50:45 UTC, coincides with a TWATTT, coincides with the date time for a new moon, coincides with the 01st of Tishri 5776 on the Jewish calendar and coincides with the date time for a transient low air pressure at the LIGO labs due to the TWATTT-amplified tidal effect which should not be confused for the Signal.

The Signal cannot travel through the Cosmos, through vacuum, for lacking the support of a sustainable continuous tension between Earth and a black hole, for being a result of a once-off collision event, for the lack of fuel.

The Signal as well as the Signal laser hybrid cannot be detected on laser interferometry for the hybrid's lack of digitally detectable holes, for being analog in its nature.

The LIGO's strategy to house the detection facilities in a tunnel for the Signal's sensitivity to air pressure interference contradicts the LIGO's assumption as to the Signal's strength to overcome the atmospheric resistance to reach the LIGO labs.

The LIGO's detection facility has no control experiment in terms of a synchronized parallel running tunnel.

The LIGO's project is actually seeking to automate the capturing of the tidal wave arrival times.

Abbreviations

D	Absolute number of days since the reference perihelion, Earth days
d_{3DC}	Absolute number of days at a 3D conjunction reckoning since the reference perihelion, Earth days
d_{META}	Relative number of days at the Moon's equinox time ahead, Earth days
d_{METB}	Relative number of days at the Moon's equinox time back, Earth days
d_{MGTA}	Relative number of days at the Moon's gee time ahead, Earth days

d_{MGTB}	Relative number of days at the Moon's gee time back, Earth days
d_{REF}	Absolute number of days at the reference perihelion - also referred to as the absolute zero, Earth days
d_{REF2}	Relative number of days at the reference Moon's perigee – also referred to as the relative zero, Earth days
d_{REL}	Relative number of days reckoning since the reference perigee, Earth days
d_{Synch}	Relative number of days at the synchronization 3D conjunction reckoning since the reference perigee, Earth days
d_{TWATT}	Relative number of days at the tidal wave arrival time transition time reckoning since the reference perigee, Earth days
$d_{TWATTTT}$	Relative number of days at the tidal wave arrival time transition time response time reckoning since the reference perigee, Earth days
FMC	Full Moon Calculator, dimensionless
LDC	Location Dependent Constant, Earth days
LIGO	Laser Interferometer Gravitational-Wave Observatory, dimensionless
META	Moon's Equinox Time Ahead, Julian date TT
METB	Moon's Equinox Time Back, Julian date TT
MGTA	Moon's Gee Time Ahead, Julian date TT
MGTB	Moon's Gee Time Back, Julian date TT
NMC	New Moon Calculator, dimensionless
Signal	Transient Gravitational-Wave Signal, dimensionless
TWATT	Tidal Wave Arrival Time Transition Time, Julian date TT
TWATTTT	Tidal Wave Arrival Time Transition Time Response Time, Julian date TT
2D	Two-dimensional, dimensionless
3D	Three-dimensional, dimensionless
3DC	Three-dimensional conjunction, dimensionless
θ	Earth's absolute angular displacement relative to the horizontal line cutting through the aphelion and the perihelion reckoning since the reference perihelion, angular degrees
δ	Phase angle relative to the Earth's absolute angular displacement, angular degrees
ϕ_{Earth}	Earth's relative angular displacement at the synchronization 3D conjunction, angular degrees
ϕ_{Synch}	Moon's relative angular displacement at the synchronization 3D conjunction, angular degrees
β	Moon's absolute angular displacement relative to the horizontal line cutting through the apogee and the perigee reckoning since the reference perigee, angular degrees
α	Moon's equinox time determinant angle, angular degrees
κ	Moon's apogee as well as Moon's perigee time determinant angle, angular degrees
$\mathcal{G}_{Signal}$	Signal's velocity, meter per second
$\mathcal{G}_0$	Signal's initial velocity, meter per second
$\mathcal{E}_0$	Signal's velocity decay pause, meter
$\mathcal{E}$	Signal's distance away from the source, meter
η	Power to the Signal's decay factor, dimensionless

Author Contributions

Charles Edward Ng'hwaya Masule is the sole author. The author read and approved the final manuscript.

Conflicts of Interest

The author declares no conflicts of interest.

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