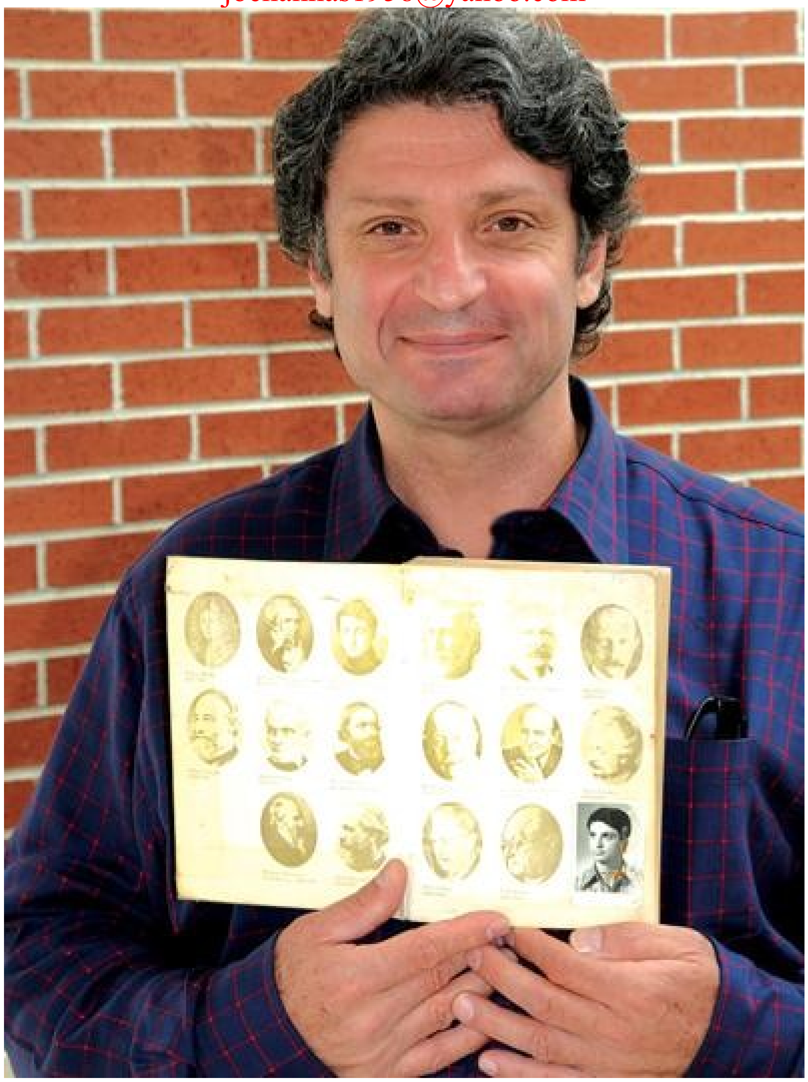
General Relativity Theory Failures Nail # 2008

V731Cephei Binary Stars Apsidal Motion solution

By professor Joe Nahhas, 2008
joenahhas1958@yahoo.com



This is me Joe Nahhas founder of real time physics July 4th 1973.

Here is me in year 2009 showing my 1979 thermo book with my picture stapled next to most notable Physicists of past 350 years whispering; it is not only Einstein is wrong but physics is wrong for past 350 years. It is time for change; regime change. It is time to end the western Royals Imperials and Corporate Physicists monopoly on physics taught and learned in past 350 years is at least 51 % wrong and Modern Physics is at least 88.88 % silly and because there is better physics and better physics is real time physics.

The elimination of relativity theory and annexation of quantum mechanics to classical mechanics is a matter of time and not a matter of science because time is a scale and not a dimension. A measurement is an event taken in present time of an event that happened in the past. We measure what is happening live in present time of what had already happened in past time.
Present time = present time
Present time = past time + [present time - past time]
Present time = past time + the difference between past time and present time
Measurement time = event time + time delays
Experiment = theory + corrections
Real time physics = event time physics + delay time physics

Applied to Planetary motion or star-star motion

An event: $r(\theta, 0) = [a(1-\varepsilon^2)/(1+\varepsilon \text{ cosine } \theta)]$ Planet motion **Event**
Time factor $\{e^{[\lambda(r) + i\omega(r)]t}\}$
Physics live: $r(\theta, t) = [a(1-\varepsilon^2)/(1+\varepsilon \text{ cosine } \theta)]\{e^{[\lambda(r) + i\omega(r)]t}\}$
Perihelion advance **corrections**:
$$W''(ob) = (-720 \times 36526 \times 3600/T)\{[\sqrt{(1-\varepsilon^2)}]/(1-\varepsilon)^2\}[(v^* + v^\circ)/c]^2$$
= 43.11" of an arc per century for mercury

"The silly notion of time as a dimension can be sent back to sender"

Abstract: Eclipsing binary stars has an axial rotation rate given by New Newton's time dependent equation:
$W^\circ(obo) = (-720 \times 36526/T) \times \{[\sqrt{(1-\varepsilon^2)}]/(1-\varepsilon)^2\}\{[v^* + v^\circ]/c\}^2$
With m = mass p = primary s = secondary
Where T = orbital period = 6.068456days; ε = orbital eccentricity = 0.0165
And $v^*(p)$ = primary orbital speed = 85.6111965 km/s
And $v^*(s)$ = secondary orbital speed = 109.38 km/s;
And $v^\circ(p)$ = primary spin speed = 19km/sec; $v^\circ(s)$ = primary spin speed = 18km/sec;
And $v^* = v^*(p) + v^*(s)$; $v^\circ = v^\circ(p) + v^\circ(s)$; σ^* = orbit standard deviation = 11.9288422
And σ° = spin standard deviation. Taking upper limit U = 10717 years by Nahhas
This binary star system has an axial rotation period of U = [7500, 12500] years
Einstein's space-timers came up with N/A? Astronomers suggested new rigging schemes to match it with observed numbers because the calculations did not match without giving an actual number.

<u>Introduction:</u> For 350 years Physicists Astronomers and Mathematicians missed Kepler's time dependent equation that changed Newton's equation into a time dependent Newton's equation and together these two equations combine classical mechanics and quantum mechanics into one Universal Mechanics explains "relativistic" as "apparent" visual effects or light aberrations visual effects along the line of sight or as the difference between time dependent measurements and time independent measurements of moving objects and solved all motion puzzles claimed by relativity theory and solved all mechanics motion puzzles posted on Smithsonian NASA website

SAO/NASA as puzzles that Einstein and all 100,000 space-time "physicists" could not solve by space-time physics or said or any published physics.

Real time universal mechanics solution

All there is in the Universe is objects of mass m moving in space (x, y, z) at a location **r** = **r** (x, y, z). The state of any object in the Universe can be expressed as the product <u>**S** = m **r**; State = mass x location:</u>

$\mathbf{P} = d\mathbf{S}/dt = m(d\mathbf{r}/dt) + (dm/dt)\mathbf{r}$ = Total moment
= change of location + change of mass
$= mv + m'r$; v = velocity = d r/d t; m' = mass change rate

$\mathbf{F} = d\mathbf{P}/dt = d^2\mathbf{S}/dt^2$ = Total force
$= m(d^2\mathbf{r}/dt^2) + 2(dm/dt)(d\mathbf{r}/dt) + (d^2m/dt^2)\mathbf{r}$
$= m\boldsymbol{\gamma} + 2m'\mathbf{v} + m''\mathbf{r}$; γ = acceleration; m'' = mass acceleration rate

<u>In polar coordinates system</u>
We Have $\mathbf{r} = r\,\mathbf{r}_{(1)}$; $\mathbf{v} = r'\,\mathbf{r}_{(1)} + r\theta'\,\boldsymbol{\theta}_{(1)}$; $\boldsymbol{\gamma} = (r'' - r\theta'^2)\mathbf{r}_{(1)} + (2r'\theta' + r\theta'')\boldsymbol{\theta}_{(1)}$
r = location; **v** = velocity; **γ** = acceleration
$\mathbf{F} = m\boldsymbol{\gamma} + 2m'\mathbf{v} + m''\mathbf{r}$
$\mathbf{F} = m[(r''-r\theta'^2)\,\mathbf{r}_{(1)} + (2r'\theta' + r\theta'')\,\boldsymbol{\theta}_{(1)}] + 2m'[r'\,\mathbf{r}_{(1)} + r\theta'\,\boldsymbol{\theta}_{(1)}] + (m''r)\,\mathbf{r}_{(1)}$
$= [d^2(mr)/dt^2 - (mr)\theta'^2]\,\mathbf{r}_{(1)} + (1/mr)\,[d(m^2r^2\theta')/dt]\,\boldsymbol{\theta}_{(1)}$
$= [-GmM/r^2]\,\mathbf{r}_{(1)}$ ------------------------------ Newton's Gravitational Law
Proof**:**
First $\mathbf{r} = r[\cos\theta\,\hat{\imath} + \sin\theta\,\hat{J}] = r\,\mathbf{r}_{(1)}$
Define $\mathbf{r}_{(1)} = \cos\theta\,\hat{\imath} + \sin\theta\,\hat{J}$
Define $\mathbf{v} = d\mathbf{r}/dt = r'\,\mathbf{r}_{(1)} + r\,d[\mathbf{r}_{(1)}]/dt$
$= r'\,\mathbf{r}_{(1)} + r\theta'[-\sin\theta\,\hat{\imath} + \cos\theta\,\hat{J}]$
$= r'\,\mathbf{r}_{(1)} + r\theta'\,\boldsymbol{\theta}_{(1)}$

Define $\boldsymbol{\theta}_{(1)} = -\sin\theta\,\hat{\imath} + \cos\theta\,\hat{J}$;
And with $\mathbf{r}_{(1)} = \cos\theta\,\hat{\imath} + \sin\theta\,\hat{J}$

Then $d[\boldsymbol{\theta}_{(1)}]/dt = \theta'[-\cos\theta\,\hat{\imath} - \sin\theta\,\hat{J}] = -\theta'\,\mathbf{r}_{(1)}$
And $d[\mathbf{r}_{(1)}]/dt = \theta'[-\sin\theta\,\hat{\imath} + \cos\theta\,\hat{J}] = \theta'\,\boldsymbol{\theta}_{(1)}$

Define $\boldsymbol{\gamma} = d[r'\,\mathbf{r}_{(1)} + r\theta'\,\boldsymbol{\theta}_{(1)}]/dt$
$= r''\,r_{(1)} + r'd[\mathbf{r}_{(1)}]/dt + r'\theta'\,\mathbf{r}_{(1)} + r\theta''\,\mathbf{r}_{(1)} + r\theta' d[\theta_{(1)}]/dt$
$\boldsymbol{\gamma} = (r'' - r\theta'^2)\,\mathbf{r}_{(1)} + (2r'\theta' + r\theta'')\,\boldsymbol{\theta}_{(1)}$

With $d^2(mr)/dt^2 - (mr)\theta'^2 = -GmM/r^2$ Newton's Gravitational Equation (1)
And $d(m^2r^2\theta')/dt = 0$ Central force law (2)

<u>(2)</u>: $d(m^2r^2\theta')/dt = 0$
Then $m^2r^2\theta'$ = constant

$= H (0, 0)$
$= m^2 (0, 0)\, h (0, 0);\ h (0, 0) = r^2 (0, 0)\, \theta'(0, 0)$
$= m^2 (0, 0)\, r^2 (0, 0)\, \theta'(0, 0);\ h (\theta, 0) = [r^2 (\theta, 0)]\, [\theta'(\theta, 0)]$
$= [m^2 (\theta, 0)]\, h (\theta, 0);\ h (\theta, 0) = [r^2 (\theta, 0)]\, [\theta'(\theta, 0)]$
$= [m^2 (\theta, 0)]\, [r^2 (\theta, 0)]\, [\theta'(\theta, 0)]$
$= [m^2 (\theta, t)]\, [r^2 (\theta, t)]\, [\theta' (\theta, t)]$
$= [m^2(\theta, 0)\, m^2(0,t)][r^2(\theta,0) r^2(0,t)][\theta'(\theta, t)]$
$= [m^2(\theta, 0)\, m^2(0,t)][r^2(\theta,0) r^2(0,t)][\theta'(\theta, 0)\, \theta' (0, t)]$

With

$m^2 r^2 \theta' =$ constant
Differentiate with respect to time
Then $2mm'r^2\theta' + 2m^2rr'\theta' + m^2r^2\theta'' = 0$
Divide by $m^2r^2\theta'$
Then $2 (m'/m) + 2(r'/r) + \theta''/\theta' = 0$
This equation will have a solution $2 (m'/m) = 2[\lambda (m) + ì\, \omega (m)]$
And $2(r'/r) = 2[\lambda (r) + ì\, \omega (r)]$
And $\theta''/\theta' = -2\{\lambda (m) + \lambda (r) + ì\, [\omega (m) + \omega (r)]\}$

Then $(m'/m) = [\lambda (m) + ì\, \omega (m)]$
Or $d m/m\, d t = [\lambda (m) + ì\, \omega (m)]$
And $dm/m = [\lambda (m) + ì\, \omega (m)]\, d t$
Then $m = m (0)\, e^{[\lambda (m) + ì\, \omega (m)] t}$
$m = m (0)\, m (0, t);\ m (0, t)\, e^{[\lambda (m) + ì\, \omega (m)] t}$
With initial spatial condition that can be taken at $t = 0$ anywhere then $m (0) = m (\theta, 0)$
And $m = m (\theta, 0)\, m (0, t) = m (\theta, 0)\, e^{[\lambda (m) + ì\, \omega (m)] t}$
And $m (0, t) = e^{[\lambda (m) + ì\, \omega (m)] t}$
Similarly we can get
Also, $r = r (\theta, 0)\, r (0, t) = r (\theta, 0)\, e^{[\lambda (r) + ì\, \omega (r)] t}$
With $r (0, t) = e^{[\lambda (r) + ì\, \omega (r)] t}$
Then $\theta'(\theta, t) = \{H(0, 0)/[m^2(\theta,0)\, r(\theta,0)]\}\, e^{-2\{[\lambda(m) + \lambda(r)] + ì\, [\omega(m) + \omega(r)]\} t}$ -----I
And $\theta'(\theta, t) = \theta' (\theta, 0)]\, e^{-2\{[\lambda (m) + \lambda(r)] + ì\, [\omega (m) + \omega (r)]\} t}$ ------------------------I
And, $\theta'(\theta, t) = \theta' (\theta, 0)\, \theta' (0, t)$
And $\theta' (0, t) = e^{-2\{[\lambda (m) + \lambda (r)] + ì\, [\omega (m) + \omega(r)]\} t}$
Also $\theta'(\theta, 0) = H (0, 0)/ m^2 (\theta, 0)\, r^2 (\theta, 0)$
And $\theta'(0, 0) = \{H (0, 0)/ [m^2 (0, 0)\, r (0, 0)]\}$

<u>With (1)</u>: $d^2 (m r)/dt^2 - (m r)\, \theta'^2 = -GmM/r^2 = -Gm^3M/m^2r^2$
And $d^2 (m r)/dt^2 - (m r)\, \theta'^2 = -Gm^3 (\theta, 0)\, m^3 (0, t)\, M/ (m^2r^2)$
Let $m r = 1/u$
Then $d (m r)/d t = -u'/u^2 = - (1/u^2) (\theta')\, d u/d \theta = (- \theta'/u^2)\, d u/d \theta = -H\, d u/d \theta$
And $d^2 (m r)/dt^2 = -H\theta' d^2u/d\theta^2 = - Hu^2 [d^2u/d\theta^2]$

$-Hu^2 [d^2u/d\theta^2] - (1/u) (Hu^2)^2 = -Gm^3 (\theta, 0)\, m^3 (0, t)\, Mu^2$

$[d^2u/ d\theta^2] + u = Gm^3 (\theta, 0)\ m^3 (0, t)\ M/ H^2$

$t = 0;\ m^3 (0, 0) = 1$
$u = Gm^3 (\theta, 0)\ M/ H^2 + A \text{ cosine } \theta = Gm (\theta, 0)\ M (\theta, 0)/ h^2 (\theta, 0)$

And $m\ r = 1/u = 1/ [Gm (\theta, 0)\ M (\theta, 0)/ h (\theta, 0) + A \text{ cosine } \theta]$
$= [h^2/ Gm (\theta, 0)\ M (\theta, 0)]/ \{1 + [Ah^2/ Gm (\theta, 0)\ M (\theta, 0)]\ [\text{cosine } \theta]\}$
$= [h^2/Gm (\theta, 0)\ M (\theta, 0)]/ (1 + \varepsilon \text{ cosine } \theta)$

Then $m (\theta, 0)\ r (\theta, 0) = [a (1-\varepsilon^2)/ (1+ \varepsilon \text{ cosine } \theta)]\ m (\theta, 0)$
Dividing by $m (\theta, 0)$
Then $r (\theta, 0) = a (1-\varepsilon^2)/ (1+ \varepsilon \text{ cosine } \theta)$
This is Newton's Classical Equation solution of two body problem which is the equation of an ellipse of semi-major axis of length a and semi minor axis $b = a \sqrt{(1 - \varepsilon^2)}$ and focus length $c = \varepsilon a$
And $m\ r = m (\theta, t)\ r (\theta, t) = m (\theta, 0)\ m (0, t)\ r (\theta, 0)\ r (0, t)$
Then, $r (\theta, t) = [a (1-\varepsilon^2)/ (1+ \varepsilon \text{ cosine } \theta)]\ e^{[\lambda (r) + i\, \omega (r)]\, t}$--------------------------- II
This is Newton's time dependent equation that is missed for 350 years
If $\lambda (m) \approx 0$ fixed mass and $\lambda(r) \approx 0$ fixed orbit; then
Then $r (\theta, t) = r (\theta, 0)\ r (0, t) = [a (1-\varepsilon^2)/ (1+\varepsilon \text{ cosine } \theta)]\ e^{i\, \omega (r)\, t}$
And $m = m (\theta, 0)\ e^{+ i\, \omega (m)\, t} = m (\theta, 0)\ e^{i\, \omega (m)\, t}$

We Have $\theta'(0, 0) = h (0, 0)/r^2 (0, 0) = 2\pi ab/ Ta^2 (1-\varepsilon)^2$
$= 2\pi a^2 [\sqrt{(1-\varepsilon^2)}]/T a^2 (1-\varepsilon)^2$
$= 2\pi [\sqrt{(1-\varepsilon^2)}]/T (1-\varepsilon)^2$
Then $\theta'(0, t) = \{2\pi [\sqrt{(1-\varepsilon^2)}]/ T (1-\varepsilon)^2\} \text{ Exp } \{-2[\omega (m) + \omega (r)]\, t$
$= \{2\pi [\sqrt{(1-\varepsilon^2)}]/ (1-\varepsilon)^2\} \{\text{cosine } 2[\omega (m) + \omega (r)]\, t - i \sin 2[\omega (m) + \omega (r)]\, t\}$
$= \theta'(0, 0) \{1- 2\sin^2 [\omega (m) + \omega (r)]\, t\}$
$- 2i\, \theta'(0, 0) \sin [\omega (m) + \omega (r)]\, t \text{ cosine } [\omega (m) + \omega (r)]\, t$

Then $\theta'(0, t) = \theta'(0, 0) \{1 - 2\text{sine}^2 [\omega (m)\, t + \omega (r)\, t]\}$
$- 2i\, \theta'(0, 0) \sin [\omega (m) + \omega(r)]\, t \text{ cosine } [\omega (m) + \omega(r)]\, t$

$\Delta \theta' (0, t) = \text{Real } \Delta \theta' (0, t) + \text{Imaginary } \Delta \theta (0, t)$
$\text{Real } \Delta \theta (0, t) = \theta'(0, 0) \{1 - 2 \text{ sine}^2 [\omega (m)\, t\, \omega(r)\, t]\}$

Let $W (\text{cal}) = \Delta \theta' (0, t) (\text{observed}) = \text{Real } \Delta \theta (0, t) - \theta'(0, 0)$
$= -2\theta'(0, 0) \text{ sine}^2 [\omega (m)\, t + \omega(r)\, t]$
$= -2[2\pi [\sqrt{(1-\varepsilon^2)}]/T (1-\varepsilon)^2] \text{ sine}^2 [\omega (m)\, t + \omega(r)\, t]$
And $W (\text{cal}) = -4\pi [\sqrt{(1-\varepsilon^2)}]/T (1-\varepsilon)^2] \text{ sine}^2 [\omega (m)\, t + \omega(r)\, t]$

<u>If this apsidal motion is to be found as visual effects</u>, then

With, $v°$ = spin velocity; v^* = orbital velocity; $v°/c = \tan \omega (m)\, T°$; $v^*/c = \tan \omega (r)\, T^*$
Where $T°$ = spin period; T^* = orbital period

And ω (m) T° = Inverse tan v°/c; ω (r) T*= Inverse tan v*/c
W (ob) = -4 π [$\sqrt{(1-\varepsilon^2)}$]/T $(1-\varepsilon)^2$] sine² [Inverse tan v°/c + Inverse tan v*/c] radians
Multiplication by 180/π

W (ob) = (-720/T) {[$\sqrt{(1-\varepsilon^2)}$]/ $(1-\varepsilon)^2$} sine² {Inverse tan [v°/c + v*/c]/ [1 - v° v*/c²]} degrees and multiplication by 1 century = 36526 days and using T in days

W° (ob) = (-720x36526/Tdays) {[$\sqrt{(1-\varepsilon^2)}$]/ $(1-\varepsilon)^2$} x
sine² {Inverse tan [v°/c + v*/c]/ [1 - v° v*/c²]} degrees/100 years

Approximations I

With v° << c and v* << c, then v° v* <<< c² and [1 - v° v*/c²] ≈ 1
Then W° (ob) ≈ (-720x36526/Tdays) {[$\sqrt{(1-\varepsilon^2)}$]/ $(1-\varepsilon)^2$} x sine² Inverse tan [v°/c + v*/c] degrees/100 years

Approximations II
With v° << c and v* << c, then sine Inverse tan [v°/c + v*/c] ≈ (v° + v*)/c
W° (ob) = (-720x36526/Tdays) {[$\sqrt{(1-\varepsilon^2)}$]/ $(1-\varepsilon)^2$} x $[(v° + v^*)/c]^2$ degrees/100 years
This is the equation that gives the correct apsidal motion rates ----------------------III

The circumference of an ellipse: 2πa (1 - ε^2/4 + 3/16$(\varepsilon^2)^2$- --.) ≈ 2πa (1-ε^2/4); R =a (1-ε^2/4)
Where v (m) = $\sqrt{}$ [GM²/ (m + M) a (1-ε^2/4)]
And v (M) = $\sqrt{}$ [Gm² / (m + M) a (1-ε^2/4)]
Looking from top or bottom at two stars they either spin in clock (↑) wise or counter clockwise (↓)
Looking from top or bottom at two stars they either approach each other coming from the top (↑) or from the bottom (↓)
Knowing this we can construct a table and see how these two stars are formed. There are many combinations of velocity additions and subtractions and one combination will give the right answer.

1- Advance of Perihelion of mercury. [No spin factor] Because data are given with no spin factor

G=6.673x10^-11; M=2x 10^{30}kg; m=.32x10^{24}kg; ε = 0.206; T=88days
And c = 299792.458 km/sec; a = 58.2km/sec; 1-ε^2/4 = 0.989391
With v° = 2meters/sec
And v *= $\sqrt{}$ [GM/a (1-ε^2/4)] = 48.14 km/sec
Calculations yields: v = v* + v° = 48.14km/sec (mercury)
And [$\sqrt{(1-\varepsilon^2)}$] $(1-\varepsilon)^2$ = 1.552
W" (ob) = (-720x36526x3600/T) {[$\sqrt{(1-\varepsilon^2)}$]/ $(1-\varepsilon)^2$} $(v/c)^2$
W" (ob) = (-720x36526x3600/88) x (1.552) $(48.14/299792)^2$ = 43.0”/century

This is the rate of for the advance of perihelion of planet mercury explained as "apparent" without the use of fictional forces or fictional universe of space-time confusions of physics of relativity.

Venus Advance of perihelion solution:

W" (ob) = (-720x36526x3600/T) {[√ (1-ε²)]/ (1-ε) ²} [(v°+ v*)/c] ² seconds/100 years

Data: T=244.7days v°= v° (p)] = 6.52km/sec; ε = 0.0.0068; v*(p) = 35.12
Calculations

1-ε = 0.0068; (1-ε²/4) = 0.99993; [√ (1-ε²)] / (1-ε) ² = 1.00761
G=6.673x10^-11; M (0) = 1.98892x19^30kg; R = 108.2x10^9m

V* (p) = √ [GM²/ (m + M) a (1-ε²/4)] = 41.64 km/sec
Advance of perihelion of Venus motion is given by this formula:

W" (ob) = (-720x36526x3600/T) {[√ (1-ε²)]/ (1-ε) ²]} [(v° + v*)/c] ² seconds/100 years

W" (ob) = (-720x36526x3600/T) {[√ (1-ε²)]/ (1-ε) ²} sine² [Inverse tan 41.64/300,000]
= (-720x36526x3600/224.7) (1.00762) (41.64/300,000)²

W" (observed) = 8.2"/100 years; observed 8.4"/100years

This is a proof that not only space-time physicists are incompetent liars but it does not require fictional forces or universes to example an insignificant issue of advance of perihelion which says that every 301395.3488 years Mercury does one extra run around mother sun

Looking from top or bottom at two stars they either spin in clock (↑) wise or counter clockwise (↓)

Looking from top or bottom at two stars they either approach each other coming from the top (↑) or from the bottom (↓)

Knowing this we can construct a table and see how these two stars are formed. There are many combinations of velocity additions and subtractions and one combination will give the right answer.

The circumference of an ellipse: 2πa (1 - ε²/4 + 3/16(ε²)²- --.) ≈ 2πa (1-ε²/4); R =a (1-ε²/4)

From Newton's laws for a circular orbit: m v²/ r (cm) = GmM/r²; r (cm) = [M/m + M] r
Then v² = [GM r (cm)/ r²] = GM²/ (m + M) r
And v = √ [GM²/ (m + M) r = a (1-ε²/4)]
And v* = v (m) = √ [GM²/ (m + M) a (1-ε²/4)]
Where v* (m) = √ [GM²/ (m + M) a (1-ε²/4)]
= v* (p) = orbit velocity of primary w. r. t Center of mass
And v* (M) = √ [Gm² / (m + M) a (1-ε²/4)]
= v* (s) = orbit velocity of secondary w. r. t Center of mass

Looking from top or bottom at two stars they either spin in clock (↑) wise or counter clockwise (↓)

Looking from top or bottom at two stars they either approach each other coming from the top (↑) or from the bottom (↓)
Knowing this we can construct a table and see how these two stars are formed. There are many combinations of velocity additions and subtractions and one combination will give the right answer.
V 731 Cephei:

Primary → Secondary ↓	v°(p) ↑ v* (p)↑	v° (p) ↑v* (p)↓	v° (p) ↓ v* (p) ↑	v° (p) ↓V* (p) ↓
v°(s) ↑ v* (s)↑	Spin=[↑,↑] [↑,↑]=orbit	[↑,↑][↓,↑]	[↓,↑][↑,↑]	[↓,↑][↓,↑]
Spin results	v°(p) + v°(s)	v°(p) + v°(s)	- v°(p) + v°(s)	-v°(p) + v°(s)
Orbit results	v*(p) + v*(s)	-v*(p) + v*(s)	v* (p) + v*(s)	-v* (p) + v* (s)
Examples	V731Cephei			
v° (s) ↑v* (s)↓	[↑,↑][↑,↓]	[↑,↑][↓,↓]	[↓,↑][↑,↓]	[↓,↑][↓,↓]
Spin results	v°(p) + v°(s)	v°(p) + v°(s)	-v°(p) + v°(s)	-v°(p) + v°(s)
Orbit results	v*(p) - v*(s)	-v*(p) - v*(s)	v*(p) - v*(s)	-v* (p) - v* (s)
Examples				
v° (p) ↓ v*(s) ↑	[↑,↓][↑,↑]	[↑,↓][↓,↑]	[↓,↓][↑,↑]	[↓,↓][↓,↑]
Spin results	v°(p) - v°(s)	v°(p) - v°(s)	-v°(p) - v°(s)	-v°(p) - v°(s)
Orbit results	v*(p) + v*(s)	-v*(p) + v*(s)	v*(p) + v*(s)	-v* (p) + v* (s)
Examples				
v° (s) ↓V*(s) ↓	[↑,↓][↑,↓]	[↑,↓][↓,↓]	[↓,↓][↑,↓]	[↓,↓][↓,↓]
Spin results	v°(p) - v°(s)	v°(p) - v°(s)	-v°(p) - v°(s)	-v°(p) - v°(s)
Orbit results	v*(p) - v*(s)	-v*(p) - v*(s)	v*(p) - v*(s)	-v* (p) - v* (s)
Examples				V731Cephei

Next the same equation will be used to find the advance of Periastron or "apparent" apsidal motion of V731 binary stars system.

2-V731Cehpei Apsidal Motion Solution

$W° (ob) = (-720x36526/T) \{[\sqrt{(1-\varepsilon^2)}]/ (1-\varepsilon)^2\} [(v°+ v^*)/c]^2$ degrees/100 years

V731data [see below]
T= 6.068567days; m= 2.577 M $_{(0);}$ M = 2.577 M (0); [v° $_{(m)}$, v° $_{(M)}$] = [19+/-3, 18+/-3]
ε = 0.0165 a = 23.27x R (0)
Calculations
M + m = 2.738; 1-ε=0.9835 $1-\varepsilon^2/4=0.9999$ R (0) = .696x10^9m
With v° [21, 28] = [19 +/- 3] + [18 +/- 3] = 37 +/- 6
With $v^* (p) = \sqrt{[GM^2/ (m + M) a (1-\varepsilon^2/4)]}$ = 85.6111965km/sec

And $v^* (M) = \sqrt{[Gm^2/ (m + M) a (1-\varepsilon^2/4)]} = 109.38$ km/sec

Also, $[\sqrt{(1-\varepsilon^2)}]/ (1-\varepsilon)^2 = 1.033694356$

With $v^* (cm) = 2\sum m v\sum/m = 96.46688$ km/sec; $2 v^* (cm) = 192.9337619$

And $\sigma = \sqrt{\{\sum [v^*-v^* (cm)]^2/2\}} = \sqrt{\{[96.46688 - 85.6]^2/2\} + \{[109.38 - 96.46688]^2/2\}}$

$= 11.9288422$ km/sec

With $v^* (p) = 85.6111965$ km/sec +/- 11.9288422 km/sec

And $v^* (s) = 109.38$ km/sec +/- 11.9288422 km/sec

Then $v^* (p) + v^* (s) = [192.9337619 +/-] \times 2 = 23.8567844$ km/sec

Then $v^* + v^\circ = 229.9288422$ km/sec +/- 29.8567844 km/sec

<u>Now:</u> Taking the upper limit

Then $v^* + v^\circ = 229.9288422$ km/sec + 29.8567844 km/sec = 259.7856266 km/sec

$W^\circ (obo) = (-720 \times 36526/T) \times \{[\sqrt{(1-\varepsilon^2)}]/ (1-\varepsilon)^2\} \{[v^* + v^\circ]/c\}^2$

W°/century= $(-720 \times 36526/6.068567) (1.033694356) (259.7856266 /300,000)^2=2.91^\circ$/century

W°/century = 3.35914177°/century = 0.0335914177°/year

U = 360/0.0335914177° = 10717 years

<u>Observed values are U = 10000 +/- 2500</u>

<u>References</u>: 1- Absolute dimensional and apsidal motion of V731Cep
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joenahhas1958@yahoo.com