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Relativity Theory = Visual deceptions S = r Exp ἰ ω t; sin ω t= v/c

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r --------------------------------Light sensing of moving objects ---------------------- **S**
Actual object at r ------------------ Light --------------------- Visual object seen as at S
r ------------------ Cosine (wt) + i sine (wt) ----------- S = r [cosine (wt) + i sine (wt)]
Particle ------------------------- Light ------------------------------ Wave
Newton ---------------- Kepler's Time dependent ------------- Newton time dependent

A-Special theory of relativity

1-Length Contraction

Line of Sight: r cosine wt: light aberrations
A moving object with velocity v will have when visualized through light sensing a light aberration angle (wt); w = constant and t= time

Also, sine wt = v/c; cosine wt = √ [1-sine² (wt)] = √ [1-(v/c) ²]
A visual object moving with velocity v will be seen as S
S = **r** [cosine (wt) + i sine (wt)] = **r** Exp [i wt]; Exp = Exponential

$S = r [\sqrt{[1-(v/c)^2]} + i (v/c)] = S_x + i S_y$

S_x = Visual location along the line of sight = $r [\sqrt{[1-(v/c)^2]}$

This Equation is special relativity **Length Contraction** formula and it is just the visual effects and caused by light aberrations of a moving object along the line of sight.

In a right angled velocity triangle A B C: Angle A = wt
Angle B = 90°; Angle C = 90° -wt
AB = hypotenuse = c; BC = opposite = v; CA= adjacent = c √ [1-(v/c) ²]

2- Time dilatations

Along the line of sight
S = **r** cosine wt
Hypotenuse = **S** = [**c** t $_x$] = **c** t $\sqrt{[1-(v/c)^2]}$;
Where t = self time; t $_x$ = time by others

$t_x = t \sqrt{[1-(v/c)^2]}$; and
$t = \{1/\sqrt{[1-(v/c)^2]}\}\, t_x$

These are time **dilatation equations** given by Einstein's special relativity theory.

3- **Δ E= mc²**

$\mathbf{S} = \mathbf{r}\, Exp\, (i\, \omega\, t)$; $\sin \omega t = v/c$; $v = c \sin \omega t$; $r = -(c/\omega) \text{ cosine } \omega t$;
And $\mathbf{r}.\, \mathbf{v} = (-c^2/\omega) \sin \omega t \text{ cosine } \omega t$

$\mathbf{P} = d\,\mathbf{S}/d\,t = (\mathbf{v} + i\, \omega\, \mathbf{r})\, Exp\, (i\, \omega\, t)$; $v^2 = c^2 \sin^2 \omega t$; $\omega^2 r^2 = c^2 \text{ cosine}^2\, \omega t$
$P^2 = (\mathbf{v} + i\, \omega\, \mathbf{r}).\, (\mathbf{v} + i\, \omega\, \mathbf{r})\, Exp\, [2(i\, \omega\, t)] = [v^2 - \omega^2 r^2 + 2i\, \omega\, (\mathbf{r}.\, \mathbf{v})]\, Exp\, [2(i\, \omega\, t)]$

$P^2 = [c^2 \sin^2 \omega t - c^2 \text{ cosine}^2\, \omega t - 2c^2 i \sin \omega t \text{ cosine } \omega t]\, Exp\, [2(i\, \omega\, t)]$
$P^2 = - c^2 [\text{cosine}^2\, \omega t - \sin^2 \omega t + i \sin 2\omega t]\, Exp\, [2(i\, \omega\, t)]$

$P^2 = -c^2\, Exp\, [4(i\, \omega\, t)]$
$E = mP^2/2 = - mc^2/2\, [\text{cosine}^2\, 2\omega t - \sin^2 2\omega t + 2i \sin 2\omega t \text{ cosine } 2\omega t]$

$E = (-mc^2/2)\, \{1-2\sin^2 2\omega t + 2i\, [1- 2\sin^2 \omega t]\, 2[\sin \omega t \text{ cosine } \omega t]\}$
$E = (-mc^2/2)\, \{1- 2(v/c)^2 + 4i\, [1- 2(v/c)^2]\, (v/c) \sqrt{[1- (v/c)^2]}\}$

If $v = 0$ then $E (1) = (-mc^2/2)$; and
If $v = c$ then $E (2) = (mc^2/2)$ then

$\Delta E = E (2) - E (1) = (mc^2/2) - (-mc^2/2)$
$\Delta E = mc^2$

B- General Theory of relativity

What is the visual effect for angular velocity along the line of sight? At Perihelion It is called the Advance of perihelion. Let us derive that

Areal velocity is constant: $r^2\, \theta' = h$ Kepler's Law

$h = 2\pi\, a\, b/T$; $b = a\sqrt{(1-\varepsilon^2)}$; a = mean distance value; ε = eccentricity
$\mathbf{S} = \mathbf{r}\, Exp\, (i\, wt)$; $r^2\, \theta' = h = S^2\, w'$

$h = S^2 w' = [r^2\, Exp\, (2iwt)]\, w' = r^2\theta'$; $w' = (\theta')\, exp\, [-2(i\, wt)]$
And $w' = (h/r^2)\, [\text{cosine } 2(wt) - i \text{ sine } 2(wt)] = (h/r^2)\, [1- 2\text{sine}^2\, (wt) - i \sin 2(wt)]$

With $w' = w'(x) + i\, w'(y)$; $w'(x) = (h/r^2)\, [1- 2\text{sine}^2\, (wt)]$
$\Delta w' = w'(x) - (h/r^2) = - 2(h/r^2)\, \text{sine}^2\, (wt) = - 2(h/r^2)\, (v/c)^2$ $v/c = \text{sine } wt$

Angular velocity (h/r^2) (Perihelion/Periastron) = $[2\pi a.a\sqrt{(1-\varepsilon^2)}]/Ta^2 (1-\varepsilon)^2 = [2\pi\sqrt{(1-\varepsilon^2)}]/T (1-\varepsilon)^2$

$\Delta w' = [w'(x) - h/r^2] = -4\pi \{[\sqrt{(1-\varepsilon^2)}]/T (1-\varepsilon)^2\} (v/c)^2$ radian per second
[180/π; degrees][100years=36526days; century] x [3600; seconds in degree]

$$\Delta w'' = (-720x36526x3600/T) \{[\sqrt{(1-\varepsilon^2)}/(1-\varepsilon)^2\} (v/c)^2$$ **seconds of arc per century**

This equation gives the rate of advance of perihelion of Mercury with better results than all of Albert Einstein's publications and better than all of published physics.

The circumference of an ellipse: $2\pi a (1 - \varepsilon^2/4 + 3/16(\varepsilon^2)^2 - --.) \approx 2\pi a (1-\varepsilon^2/4)$; $R = a (1-\varepsilon^2/4)$
$v=\sqrt{[G m M / (m + M) a (1-\varepsilon^2/4)]} \approx \sqrt{[GM/a (1-\varepsilon^2/4)]}$; $m<<M$; Solar system

1- Advance of Perihelion of mercury.

G=6.673x10^-11; M=2x10^30kg; m=.32x10^24kg
ε = 0.206; T=88days; c = 299792.458 km/sec; a = 58.2km/sec
Calculations yields:
v =48.14km/sec; $[\sqrt{(1-\varepsilon^2)}] (1-\varepsilon)^2 = 1.552$
$\Delta w'' = (-720x36526x3600/88) x (1.552) (48.14/299792)^2 = 43.0''$/century

2- DI Herculis Apsidal motion solution: derived from S= r exp [ỉ ω t]
(See other articles by Joe Nahhas)

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

Where v^* = v (center of mass) = 106.38km/sec; v° (spin difference) = 0
T = orbital period; ε = eccentricity; c =light speed

Application 3: Gravitational red shift: Pound Rebka Experiment

S = **r** Exp [î ω t]

1/**S** = 1/**r** Exp [-ỉ ω t]
And λ (S) = λ (r) Exp [-ỉ ω t]; λ = wavelength

Then υ(s) = υ(r) Exp [ỉ ω t]; υ = frequency
And υ(S) = υ (r, t) = υ(r, 0) υ (0, t) = υ(r) υ (0, t)
With sin ω(r) t = v/c; cosine ω(r) t = $\sqrt{[1-(v/c)^2]}$

Then υ (r, t) = υ(r, 0) $\{\sqrt{[1-(v/c)^2]}$ + ỉ (v/c)} = Real {υ(r, t)} + Imaginary {υ(r, t)}
Real {υ (r, t)} = υ (r, 0) $\sqrt{[1-(v/c)^2]} \approx$ υ (r, 0) $[1 - 1/2(v/c)^2]$

Δ υ (r, t) = real {υ (r, t)} - υ (0, t)
Δ υ (r, t) = -υ (r, 0)/2 $[(v/c)^2]$

$\Delta \upsilon(r, t)/\upsilon(r, 0) = -1/2(v/c)^2[up]-\{1/2(v/c)^2[down]\} = -(v/c)^2$
$v^2 = 2gh$; $g = 9.81 km/s^2$ gravitational acceleration; h = height

$\Delta \upsilon/\upsilon$ [Total] $=-[2gh/c^2]$
This experiment is done on Harvard University Campus.

4- Light bending: Lord Edenton experiment

$S = r\, Exp\, [i\, \omega\, t]$; From Kepler's Equation: $r^2\, \theta' = h = 2A/T$
$h = S^2(r, t)\, \theta'(r, t) = r^2\, (\theta, t)\, \theta'\, (\theta, t) = r^2\, (\theta, 0)\, Exp\, [2i\, \omega\, t]\, \theta'\, (\theta, t) = 2A/t$

And $\theta'\, (\theta, t) = \theta'\, (\theta, 0)\, \theta'(0, t) = [h/\, r^2\, (\theta, 0)]\, Exp\, [-2i\, \omega(r)\, t]$
Then $\theta\, '(\theta, t) = [2A/t\, r^2\, (\theta, 0)]\, \{1 - 2\sin^2\omega(r)\, t - 2i \sin \omega(r)\, t\, \text{cosine}\, \omega(r)\, t\}$

Now $[t\, \theta'(\theta, t)] = [2A/r^2\, (\theta'\, 0)]\, [1 - 2\sin^2\omega(r)\, t] -2i\, [2A/r^2\, (\theta, 0)]\, [\sin \omega(r)\, t\, \text{cosine}\, \omega(r)\, t]$
$= \Delta x + i\, \Delta y$
$\Delta \theta = \Delta x - [A/r^2\, (\theta, 0)] = -\, [A/r^2\, (\theta, 0)][4\sin^2\omega(r)t]$; $\sin \omega(r)t = v/c$
$\Delta \theta = -\, [A/r^2\, (\theta, 0)](v/c)^2$
$(v/c)^2 \approx 1.75''$; $v^2 = GM/R$; G = Gravitational constant; M = Sun mass; R = sun radius
$\Delta \theta = [A/r^2\, (\theta, 0)]\, [1.75'']$; A = area

The values depend on near by stars and the measured values fit this equation.

Russians in 1936; $\Delta\, \theta = 2.74$
$[A/r^2\, (\theta, 0)] = \pi/2$
$\Delta \theta = \pi/2(1.75'') = 2.74''$

Application 5: Shapiro time delay (Vikings 6, 7; 1977)

Mars --------------------------- Middle---- Sun ------------- Earth

The center of mass is the sun. The sun produces a velocity field given by
$v = \sqrt{\,[GM/a\, (1- \varepsilon^2/4)]}$
From above $t = 2$ arc length$/c = 2d\, \Delta\, w/c = (8\pi\, r/c)\, (v/c)^2$; $\Delta\, w = 4\pi\, (v/c)^2$; $r = 2a = d$
$t = 16\pi GM/c^3\, (1-\varepsilon^2/4)$; $\varepsilon = [a\, (1) - a\, (2)]/\, [a\, (1) + a\, (2)] = .2075$
$t = (8\pi d/c)\, (v/c)^2 = 8\pi\, (377{,}536{,}987.5/299792.458)\, (26.6575872/299792.458)^2 = 250\mu s$
If $d = 2a\, (1-\varepsilon^2/4)$, then $t = 247.597\mu s$ value theorized actual measured value is $250\mu s$
All this is not due to space-time but due to light aberration caused by moving planets.
$\theta'(0,0) = h(0,0)/r^2(0,0) = 2\pi/T$
$\theta'\, (0,t) = \theta'(0,0) Exp(-2iwt) = \{2\pi/T\}\, Exp\, (-2iwt)$
$\theta'(0,t) = \theta'(0,0)\, [\text{cosine}\, 2(wt) - i\, \text{sine}\, 2(wt)] = \theta'(0,0)\, [1- 2\text{sine}^2\, (wt) - i \sin 2(wt)]$
$\theta'(0,t) = \theta'(0,t)(x) + \theta'(0,t)(y)$; $\theta'(0,t)(x) = \theta'(0,0)[\, 1- 2\text{sine}^2\, (wt)]$
$\theta'(0,t)(x) - \theta'(0,0) = -\, 2\theta'(0,0)\text{sine}^2(wt) = -\, 2\theta'(0,0)(v/c)^2$ $v/c = \text{sine}\, wt$; c = light speed

$T\ [\theta'(0, t) - \theta'(0, 0)] = -4\pi\ (v/c)^2$

<u>$\Delta\ \theta = -4\pi\ (v/c)^2$</u> Earth-Mars

<u>Sun-Photon:</u>

The circumference of an ellipse: $2\pi a\ (1 - \varepsilon^2/4 + 3/16(\varepsilon^2)^2---) \approx 2\pi a\ (1-\varepsilon^2/4)$; $R = a\ (1-\varepsilon^2/4)$

$v=\sqrt{\ } [Gm\ M/\ (m + M)\ a\ (1-\varepsilon^2/4)] \approx \sqrt{\ } [GM/a\ (1-\varepsilon^2/4)]$; $m<<M$; Solar system

$\Delta\Gamma = 2$ arc length/c $= 2[\Delta\ \theta]\ 2d/c = 2[- 4\pi\ (v/c)^2]\ 2d/c$; $\Delta\Gamma = -8\pi d/c\ (v/c)^2$;

$\Delta\Gamma = 8\pi d/c^3\ [GM/a\ (1-\varepsilon^2/4)] =16\pi GM/c^3\ (1-\varepsilon^2/4) = \Gamma_0\ (1 - \varepsilon^2/4)$

$\varepsilon = [a\ (\text{planet 1}) - a\ (\text{planet 2})]/\ [a\ (\text{planet 1}) + a\ (\text{planet 2})] =0.2075$ Mars-Earth

$\Gamma_0 = 16\ \pi GM/c^3= 247.5974607\mu s$=universal constant; **$\Delta\Gamma = 250\mu s$ Mars-Earth.**