

VIII

① $TSG = 2^h$

$$\alpha_L = 6^h$$

$$d_L = 0.9$$

$$\alpha_* = 6^h 1^m$$

$$d_* = 0^\circ$$

$$\pi_L = 1^\circ$$

VIII

① TSG = 2^h
 $\alpha_L = 6^h$
 $d_L = 0.9$
 $\alpha_* = 6^h 1^m$
 $d_* = 0^\circ$
 $\pi_L = 1^\circ$
 $i(\phi, \lambda)?$
 CENTRAL

$$x = \sin d_L \cdot \sin(d_L - d_*) / \sin \pi_L \rightarrow (x)$$

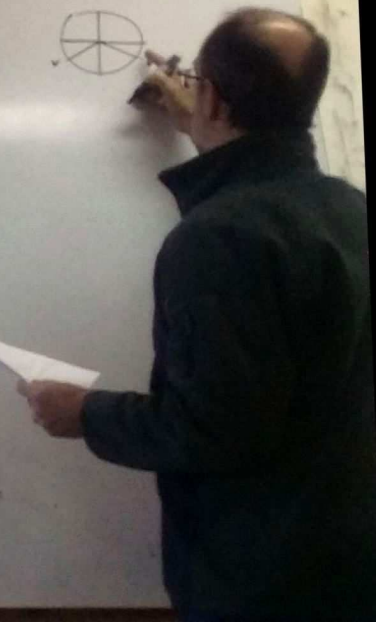
$$y = (\sin d_L \cos d_* - 0) / \sin \pi_L \rightarrow (y)$$

$$\left. \begin{matrix} \xi = x \\ \eta = y \end{matrix} \right\} \Rightarrow \left(\frac{p}{R_\oplus} \right) \cdot \cos \phi \cdot \sin H_x = (x)$$

$$1 \cdot \sin \phi \cdot \cos d_* - 0 = (y)$$

$$\Rightarrow \sin \phi = y \Rightarrow \phi = +5.739$$

$$\sin H_x = \frac{x}{\cos \phi} = -0.2513 \Rightarrow H_x = -14.552$$



VIII

① TSG = 2^h

$\alpha_L = 6^h$

$d_L = 0.9$

$\alpha_* = 6^h 1^m$

$d_* = 0^\circ$

$\pi_L = 1^\circ$

$j(\phi, \lambda)?$

CENTRAL

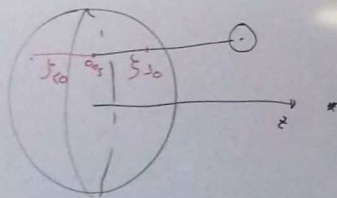
$x = \sin d_L \cdot \sin(\alpha_L - \alpha_*) / \sin \pi_L \rightarrow (x)$

$y = (\sin d_L \cos \alpha_* - 0) / \sin \pi_L \rightarrow (y)$

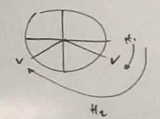
$\xi = x$
 $\eta = y$ } $\Rightarrow \frac{p}{R_\oplus} \cdot \cos \phi \cdot \sin H_* = (x)$

$1 \cdot \sin \phi \cdot \cos \alpha_* - 0 = (y)$

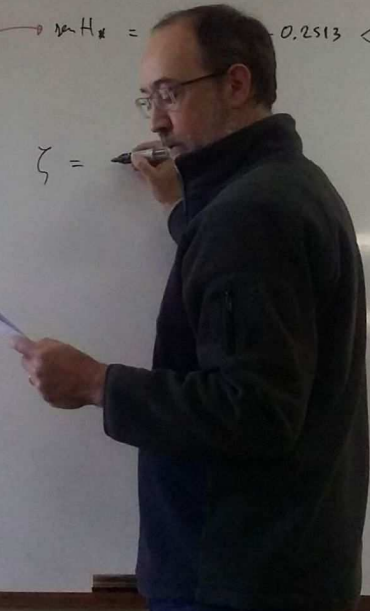
$\Rightarrow \sin \phi = y \Rightarrow \phi = +5.739$



$\sin H_* = 0.2513$
 $\begin{cases} H_* = -14.552 \\ H_* = -165.44 \end{cases}$



$\zeta =$



VIII

① TSG = 2^h

$\alpha_L = 6^h$

$d_L = 0.9$

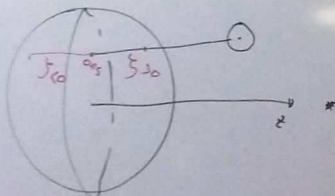
$\alpha_* = 6^h 1^m$

$d_* = 0^\circ$

$\pi_L = 1^\circ$

$j(\phi, \lambda)?$

CENTRAL



$x = \sin d_L \cdot \sin(\alpha_L - \alpha_*) / \sin \pi_L \rightarrow (x)$

$y = (\sin d_L \cos \alpha_* - 0) / \sin \pi_L \rightarrow (y)$

$\left. \begin{matrix} \xi = x \\ \eta = y \end{matrix} \right\} \Rightarrow \left[\frac{\rho}{R_\oplus} \cdot \cos \phi \cdot \sin H_* = (x) \right]$
 $\rightarrow 1 \cdot \sin \phi \cdot \cos d_* - 0 = (y)$

$\Rightarrow \sin \phi = y \Rightarrow \phi = +5.739$

$\sin H_* = \frac{x}{\cos \phi} = -0.2513$

$\begin{cases} H_1 = -14.552 \\ H_2 = -165.44 \end{cases}$

$\zeta = (\cos \phi) \cdot 1 \cdot \cos H_* > 0$ (OC. VISIBLE)

$\Rightarrow \cos H_* > 0$

~~H_2~~

$H_1 = -14.552$

$TSL = \alpha_* + H_* = TSG + \gamma \Rightarrow$



VIII

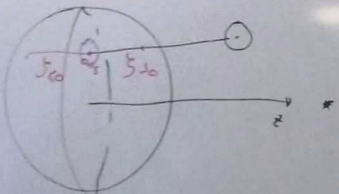
$\delta G = 2^h$
 $\delta L = 6^h$
 $\delta \alpha = 0.9$
 $\delta \delta = 6^h 1^m$
 $\delta \gamma = 0^\circ$

$$x = \sin \delta_L \cdot \sin(\alpha_L - \alpha_X) / \sin \pi_L \rightarrow (x)$$

$$y = (\sin \delta_L \cdot \cos \delta_X - 0) / \sin \pi_L \rightarrow (y)$$

$$\left. \begin{matrix} \xi = x \\ \eta = y \end{matrix} \right\} \Rightarrow \left(\frac{p}{R_\oplus} \cdot \cos \phi \cdot \sin H_X = (x) \right)$$

$$\Rightarrow 1 \cdot \sin \phi \cdot \cos \delta_X - 0 = (y)$$



$$\sin \phi = y \Rightarrow \phi = +5.739^\circ$$

$$\sin H_X = \frac{x}{\cos \phi} = -0.2513$$

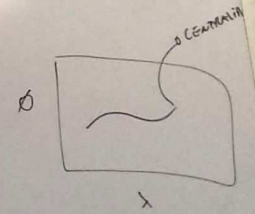
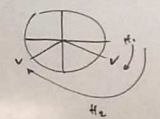
$$\begin{cases} H_1 = -14.552 \\ H_2 = -165.44 \end{cases}$$

$$\zeta = (\cos \phi) \cdot 1 \cdot \cos H_X > 0 \quad (\text{OC. VISIBLE})$$

$$\Rightarrow \cos H_X > 0 \rightarrow \cancel{H_2}$$

$$H_1 = -14.552$$

$$TSL = \alpha_X + H_X = TSG + \gamma \Rightarrow \lambda = 45.699$$



VIII

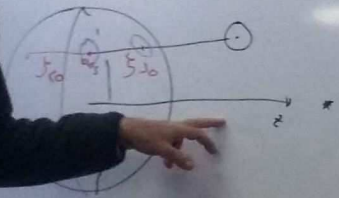
6) ecuaciones

$$x = \cos \delta_c \cdot \sin(\alpha_c - \alpha_*) \rightarrow x$$

$$y = (\sin \delta_c \cos \delta_* - 0) / \sin \pi_c \rightarrow y$$

$$\left. \begin{matrix} \xi = x \\ \eta = y \end{matrix} \right\} \Rightarrow \left(\frac{p}{R_0} \right) \cdot \cos \phi \cdot \sin H_* = x$$

$$\Rightarrow 1 \cdot \sin \phi \cdot \cos \delta_* - 0 = y$$



$$\Rightarrow \sin \phi = y \Rightarrow \phi = +5,73^\circ$$

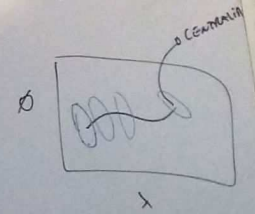
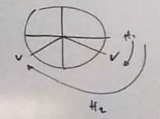
$$\sin H_* = \frac{x}{\cos \phi} = -0,2513$$

$$\begin{cases} H_* = -14,552 \\ H_* = -165,44 \end{cases}$$

$$\zeta = (\cos \phi) \cdot 1 \cdot \cos H_* > 0 \quad (\text{oc. visible})$$

$$\Rightarrow \cos H_* > 0 \rightarrow H_* = -14,552$$

$$TSL = \alpha_* + H_* = TSG + \lambda \Rightarrow \lambda = 45,699$$



VIII

ECLIPSE SOL

= *

$$= \cos \delta_c \cdot \sin(\alpha_c - \alpha_e) / \sin \pi_c = 0$$

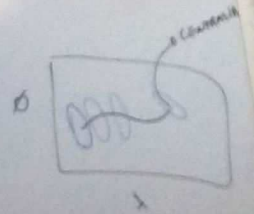
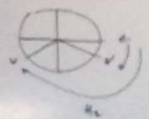
$$\sin(\alpha_c - \alpha_e) / \sin \pi_c$$

$$\rightarrow H_e = \frac{x}{\cos \phi} = -0.2513 \begin{cases} H_e = -14^\circ, 552 \\ H_e = -165^\circ, 44 \end{cases}$$

$$\zeta = (\cos \phi) \cdot \cos H_e > 0 \quad (\text{OC. VISIBILE})$$

$$\Rightarrow \cos H_e > 0 \rightarrow \begin{cases} H_e \\ H_e = -14^\circ, 552 \end{cases}$$

$$TSL = \alpha_e + H_e = TSG + \lambda \Rightarrow \lambda = 45^\circ, 698$$



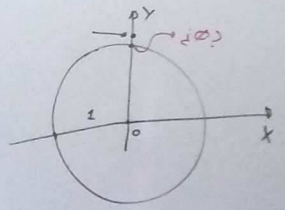
VIII

6 ECLIPSE SOL

SOL = *

$$X = \cos d_c \cdot \sin(d_c - d_o) / \sin \pi_c = 0$$

$$Y = \sin(d_c - d_o) / \sin \pi_c > 1$$



MAGNITUDE
ECLIPSE



$$\rightarrow \sin H_{\#} = \frac{X}{\cos \phi} = -0.2513$$

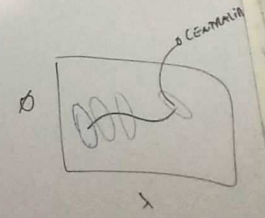
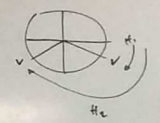
- $\circ H_1 = -14^{\circ}, 552$
- $\circ H_2 = -165^{\circ}, 44$

$$\zeta = (\cos \phi)^2 \cdot \cos H_{\#} > 0 \quad (\text{OC. VISIBLE})$$

$$\Rightarrow \cos H_{\#} > 0$$

- \circ ~~H_2~~
- $\circ H_1 = -14^{\circ}, 552$

$$TSL = \alpha_{\#} + H_{\#} = TSG + \lambda \Rightarrow \lambda = 45^{\circ}, 699$$



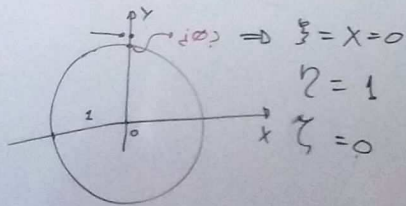
VIII

6 ECLIPSE SOL

SOL = *

$$X = \sin d_c \cdot \sin(d_c - d_o) / \sin \pi_c = 0$$

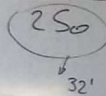
$$Y = \sin(d_c - d_o) / \sin \pi_c > 1$$



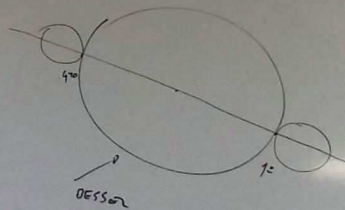
$$\left. \begin{array}{l} z = X = 0 \\ \eta = 1 \\ \zeta = 0 \end{array} \right\} \Rightarrow \theta = 67^\circ 15'$$

MAGNITUD ECLIPSE

$$M = \frac{m(\text{AUGURA})}{32'}$$



OCULT.



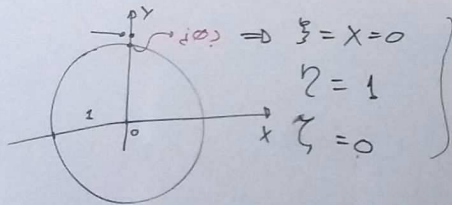
VIII

6 ECLIPSE SOL

SOL = *

$$X = \cos \delta_L \cdot \sin(\alpha_L - \alpha_S) / \sin \pi_L = 0$$

$$Y = \sin(\delta_L - \delta_S) / \sin \pi_L > 1$$

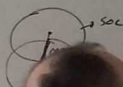


$$\left. \begin{aligned} \xi = X = 0 \\ \eta = 1 \\ \zeta = 0 \end{aligned} \right\} \Rightarrow \theta = 67^\circ 15'$$

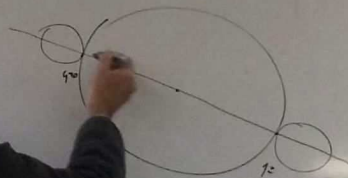
MAGNITUD ECLIPSE

$$M = \frac{m(\text{angular})}{2S_{SO}}$$

32'



OCULT.



DIST ANGULAR LUNA - ESTRELLA

$$\eta \leq \pi_L + S_L$$

CONDICION OCULTACION

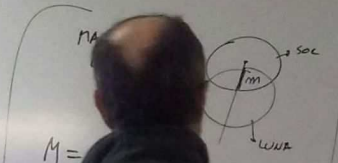
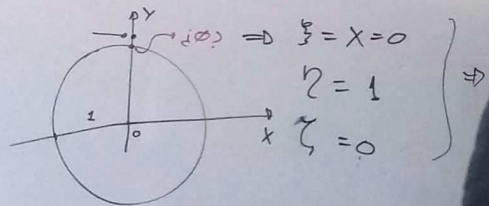
VIII

⑥ ECLIPSE SOL

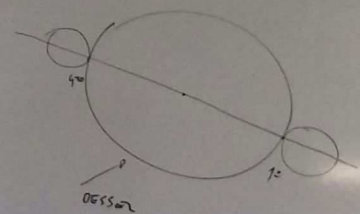
$SOL = *$

$X = \cos d_c \cdot m (d_c - d_0) / m \pi_c = 0$

$Y = m (d_c - d_0) / m \pi_c > 1$



OCULT.



BIGT ANGLE LUNA-ESTRUELA

$\eta \leq \pi_c + S_c$ CONDICION OCULTACION

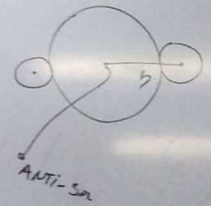
MAX TRAYECTORIA = $2\eta \approx 2^\circ 25'$

Δt PARA QUE $\Delta \lambda_c \sim 2^\circ 25' ?$

$27,5 \rightarrow 360^\circ$
 $X \rightarrow 2^\circ 25'$

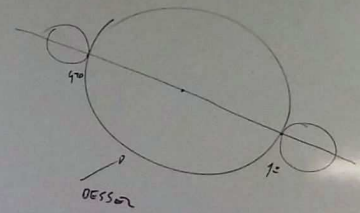
VIII

EC. LUNA : $\eta \sim 58'$ $\Rightarrow \Delta t$ para recorrer 2η



$29,5 \rightarrow 360^\circ$
 $2\eta \rightarrow X$

OCCULT.



DIST ANGULAR LUNA - ESTRELLA

$$\eta \geq \rho_L + \rho_S$$

CONDICIÓN OCCULTACIÓN

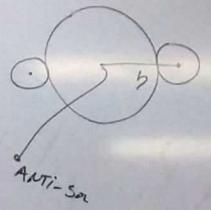
MAX TRAYECTORIA = $2\eta \approx 2^\circ 25'$

Δt PARA QUE $\Delta \lambda_L \sim 2^\circ 25' ?$

$29,5 \rightarrow 360^\circ$
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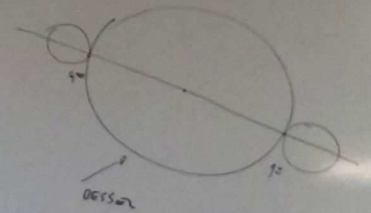
VIII

EC. LUNA : $\eta \sim 58'$ $\Rightarrow \Delta t$ para recorrer 2η



$29,5 \rightarrow 360^\circ$
 $27 \rightarrow X$

OCULT.



OC $\sim 4,4^{\text{H}}$
 EC. SOL $\sim 5,8$
 EC. LUNA $\sim 3,7$

DIST ANOMIA LUNA - ESTRELLA

$$\eta \leq \pi_L + S_L$$

CONDICION OCULTACION

MAX TRAYECTORIA = $2\eta \approx 2^\circ 25'$

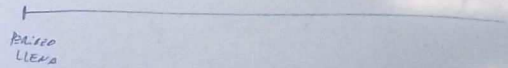
Δt para que $\Delta \lambda_L \sim 2^\circ 25' ?$

$27,5 \rightarrow 360^\circ$
 $X \rightarrow 2^\circ 25'$

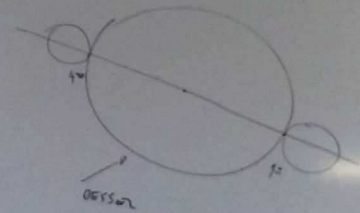
VIII

$P_{sin} \sim 29^{\circ}5'$

$P_{anom} \sim 27^{\circ}5'$



OCCULT.



- OC $\sim 4.4^{\text{H}}$
- EC. SOL $\sim 5.8^{\text{H}}$
- EC. LUNA $\sim 3.7^{\text{H}}$

DIET ANOMIA LUNA - ESTRELLA

$$\eta \leq \pi_L + S_L$$

CONDICION OCCULTACION

MAX TRAYECTORIA = $2\eta \approx 2^{\circ}25'$

Δt para que $\Delta \lambda_L \sim 2^{\circ}25'?$

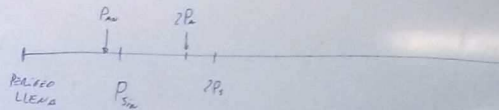
$$27,5 \rightarrow 360^{\circ}$$

$$x \rightarrow 2^{\circ}25'$$

VIII

$$P_{\text{sin}} \sim 29.5$$

$$P_{\text{anom}} \sim 27.5$$



~ 14 Pseudisoles

$$NP_s \approx (N+1)P_a$$

$$N(P_s - P_a) \approx P_a$$

$$N \approx \frac{P_a}{P_s - P_a}$$

(5) 18 años y 11 días

26/2/2017

DIST ANGULO LUNA-ESTRELLA

$$\eta \leq \pi_L + S_L$$

CONDICIÓN
OCULTACIÓN

$$\text{MAX TRAYECTORIA} = 2\eta \approx 2^\circ 25'$$

Δt PARA QUE $\Delta \lambda_L \sim 2^\circ 25'?$

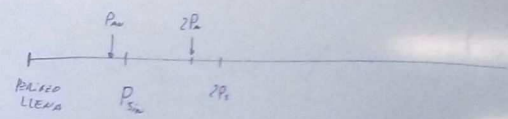
$$27.5 \rightarrow 360^\circ$$

$$x \rightarrow 2^\circ 25'$$

VIII

$$P_{sin} \sim 29.5$$

$$P_{max} \sim 27.5$$



$$NP_s \approx (N+1)P_a$$

$$N(P_s - P_a) \approx P_a$$

$$N \approx \frac{P_a}{P_s - P_a} \approx 14$$

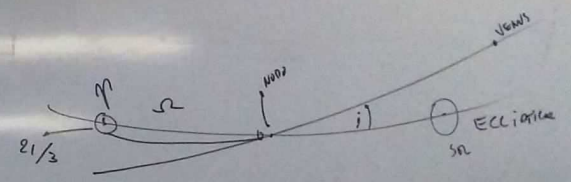
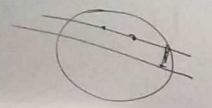
~ 14 P sinos

(5) 18 años y 11 días

26/2/2017

15/2/1993

(7) TRANSITO:



$$\Omega_v \approx 77^\circ$$

$$\lambda_0 = \Omega_v + 180$$