PAUTA PREGUNTA 2 CONTROL 3

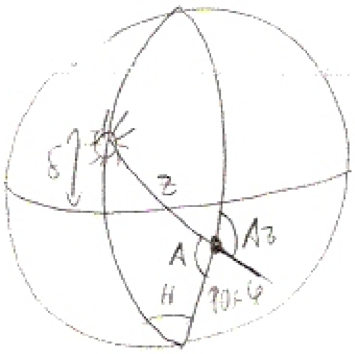
OTOÑO 2007

• LYSITEA.

$t_{of} = 14^h 28^m$, $d_0 = -4^h$

$z = 47{,}232^{grad} = 42{,}509^\circ$

$Az = 137{,}631^{grad} = A \Rightarrow A = 123{,}868^\circ$



$$\frac{\operatorname{sen} z}{\operatorname{sen} H} = \frac{\operatorname{sen}(90+\delta)}{\operatorname{sen} A}$$

$$\Rightarrow \operatorname{sen} H = \frac{\operatorname{sen} z \cdot \operatorname{sen} A}{\operatorname{sen}(90+\delta)}$$

$$= \frac{\operatorname{sen}(42{,}509) \cdot \operatorname{sen}(123{,}868^\circ)}{\operatorname{sen}(105{,}35^\circ)}$$

$\Rightarrow H = 35{,}578^\circ = 2{,}37^h$

$H = t_{of_{obs}} - t_{of_{culm}} \Rightarrow t_{of_{culm}} = 12{,}097^h$

$TU_{culm} = t_{of_{culm}} - d_0 = 16{,}097^h$

$TC_{culm} = H_0 + E_{culm} = 12{,}467^h$

$\Rightarrow \lambda = TC_{culm} - TU_{culm} = 12{,}467^h - 16{,}097^h = -3{,}63^h = 54{,}45^\circ$

• Coseno esférico:

$\cos(z) = \cos(90+\delta)\cos(90+\varphi) + \operatorname{sen}(90+\delta)\operatorname{sen}(90+\varphi)\cos(H)$

• Reemplazando y despejando

$\Rightarrow \varphi_{Ly} = -8{,}424^\circ$

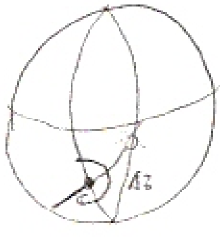
• ELARA

$t_{of} = 11^h 40^m$, $d_0 = -1^h$

$z_{El} = 52{,}13^{grad} = 46{,}9^\circ$

$Az = 216{,}21^{grad}$

$A = 400 - Az = 183{,}79^{grad} = 165{,}411^\circ$



En la culminación:

$$z \;\Big|\; 90+\varphi_{EL} \;\Big\|\; 90+\delta \quad \Rightarrow \quad z_{culm_{EL}} + 90 - \varphi_{EL} = 90+\delta$$

$$\Rightarrow \delta = z_{culm_{EL}} + \varphi_{EL}$$

$$\Rightarrow -90 - \varphi_{EL} - \varphi_{LY} = z_{culm_{EL}} + \varphi_{EL}$$

$$\Rightarrow \varphi_{EL} = \frac{-90 + \varphi_{LY} - z_{culm_{EL}}}{2} = -62,55$$

$$\Rightarrow \delta = -19,026^\circ$$

Luego: $\operatorname{sen} H = \dfrac{\operatorname{sen} z \cdot \operatorname{sen} A}{\operatorname{sen}(90+\delta)} = \dfrac{\operatorname{sen}(46,9^\circ)\cdot \operatorname{sen}(165,411^\circ)}{\operatorname{sen}(90-19,026^\circ)}$

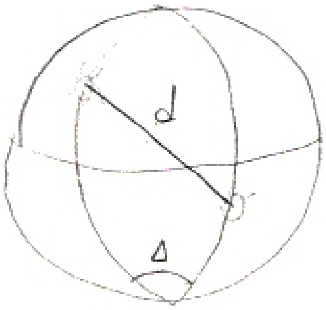
$$\Rightarrow H = 11,218^\circ \rightarrow = 0,748^h$$

$$H = t_{0f_{obs}} - t_{0f_{culm}} \Rightarrow t_{0f_{culm}} = 12,415^h$$

$$TU_{culm} = t_{0f_{culm}} - d_0 = 13,415^h$$

$$TC_{culm} = K_{ly} + E_{culm} = 12,067^h$$

$$\Rightarrow d = TC_{culm} - TU_{culm} = 12,067 - 13,415 = -1,348^h = -20,225^\circ$$



$$\Delta = |H|_{EL} + |H|_{LY} + |\Delta\lambda|$$
$$= 11,218^\circ + 35,578^\circ + (54,45 - 20,225)$$
$$= 81,021^\circ$$

Coseno esférico:

$$\cos(d) = \cos(90+\delta_{LY})\cos(90+\delta_{EL}) + \operatorname{sen}(90+\delta_{LY})\operatorname{sen}(90+\delta_{EL})\cdot\cos(\Delta)$$

Reemplazando y despejando:

$$d = 86,14^\circ$$

PAUTA PREGUNTA 1 CONTROL 3

OTOÑO 2007

$$t_{ag} = \sum \frac{L_i}{V_i} = \frac{A^2}{R \cdot V(A)} + \frac{w^* \cdot R}{V(R)} + \frac{A^2}{R \cdot V(A)} + \frac{w \cdot R}{V(R)} + \frac{L}{V}$$

$V(A) = 0{,}000075 \cdot A^2$

$V(R) = 0{,}000062 \cdot R^2$

$V = 27{,}8$ m/s

$L = 5{,}19332 \cdot R - T$

$= 5{,}19332 \cdot R - R \cdot tg(w/2) = R\left(5{,}19332 - tg(w/2)\right)$

$$\Rightarrow t_{ag} = \frac{2 \cdot \cancel{A^2}}{R \cdot 0{,}000075 \cdot \cancel{A^2}} + \frac{w^* \cdot \cancel{R}}{0{,}000062 \cdot R^{\cancel{2}}} + \frac{w \cdot \cancel{R}}{0{,}000062 \cdot R^{\cancel{2}}} + \frac{(5{,}19332 - tg(w/2))}{27{,}8} \cdot R$$

$$= \left(\frac{2}{0{,}000075} + \frac{w^*}{0{,}000062} + \frac{w}{0{,}000062}\right) \cdot \frac{1}{R} + \frac{(5{,}19332 - tg(w/2))}{27{,}8} \cdot R$$

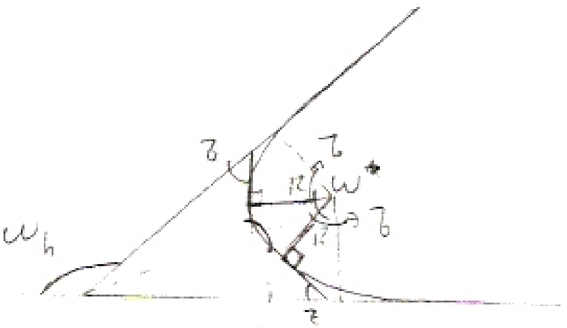
- Minimizar $t \Rightarrow \frac{\partial t}{\partial R} = 0$

$$\Rightarrow \frac{\partial t}{\partial R} = \left(\frac{2}{0{,}000075} + \frac{w^*}{0{,}000062} + \frac{w}{0{,}000062}\right) \cdot \frac{-1}{R^2} + \frac{(5{,}19332 - tg(w/2))}{27{,}8} = 0$$

$$\Rightarrow R = \sqrt{\frac{\left(\frac{2}{0{,}000075} + \frac{w^*}{0{,}000062} + \frac{w}{0{,}000062}\right)}{\frac{5{,}19332 - tg(w/2)}{27{,}8}}} = 875{,}078 \text{ m}$$

- ¿A?

$A = R\sqrt{2\tau}$, $\tau = ?$



$2\tau + w^* = w_h$

$w^* = w_h - 2\tau$

$$\Rightarrow \tau = \frac{w_h - w^*}{2}$$

$\Rightarrow w_h = w^* + 2 \cdot \tau$

... $\omega_h = ?$

$$T_p = \overline{h_t} - T = 5{,}11332 \cdot R - R \cdot tg(w/2)$$
$$= R\,(5{,}11332 - tg(w/2)) = 2581{,}306\ m$$

$$T_p = X_p + (R + \Delta R)\cdot tg\left(\frac{w_h}{2}\right) \quad R\cdot sen(\tau)$$

$$, X_p = A\sqrt{2\tau}\cdot\left(1 - \frac{\tau^2}{10}\right)$$

$$. \Delta R = Y_p - R(1-\cos(\tau)) \qquad , Y_p = A\sqrt{2\tau}\left(\frac{\tau}{3} - \frac{\tau^3}{42}\right)$$

$$\Rightarrow T_p = 2\cdot R\cdot\tau\left(1 - \frac{\tau^2}{10}\right) + \left(R + R\cdot 2\tau\left(\frac{\tau}{3} - \frac{\tau^3}{42}\right) - R(1-\cos(\tau))\right) tg\left(\frac{w - 2\cdot\tau}{2}\right) - R\cdot sen(\tau)$$

$$\Rightarrow \tau = 42{,}997^{\,grad}$$

$$\Rightarrow A = 1017$$