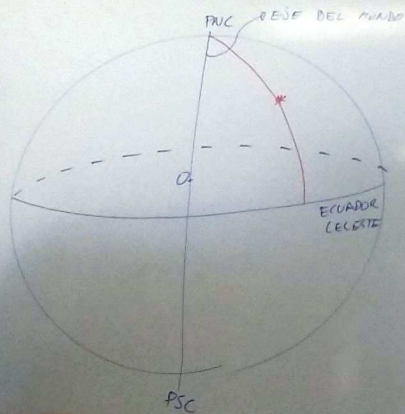


SISTEMA DE COORD. ECUATORIALES

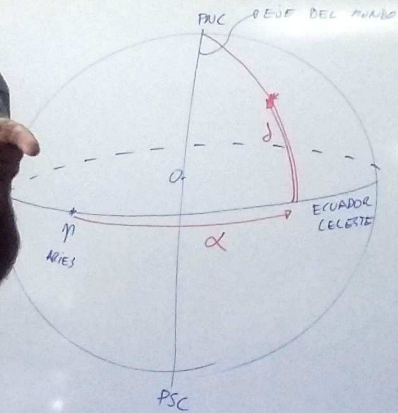


ESFÉRICAS (α, δ)
RECTANGULARES
(x, y, z)

α : ASCENSIÓN RECTA

δ : DECLINACIÓN

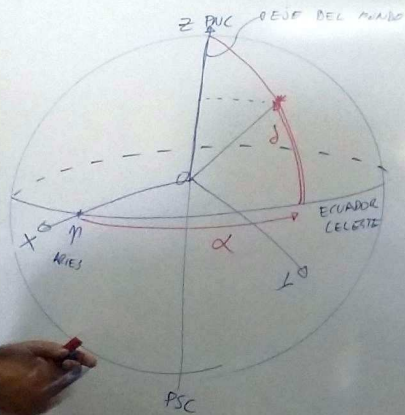
SISTEMA DE COORD. ECUATORIALES



ESFÉRICAS (α, δ)
RECTANGULARES (x, y, z)

α : ASCENSION RECTA $(0^h, 24^h)$
 δ : DECLINACION $(-90^\circ, +90^\circ)$

SISTEMA DE COORD ECUATORIALES



ESFERICAS (α, δ)
 RECTANGULARES (X, Y, Z)

$X =$

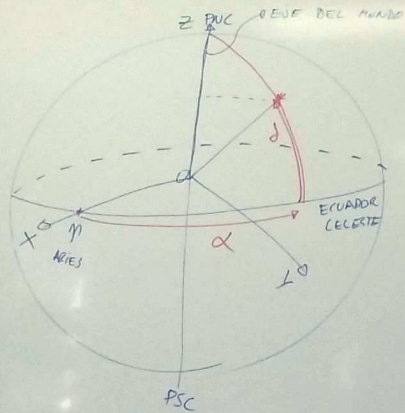
$Y =$

$Z = r \sin \delta$

α : ASCENSION RECTA $(0^h, 24^h)$

δ : DECLINACION $(-90^\circ, +90^\circ)$

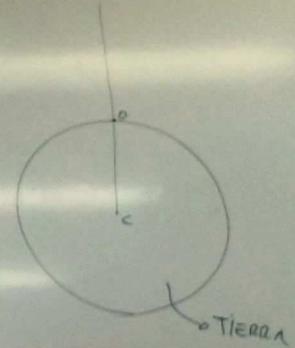
SISTEMA DE COORD ECUATORIALES



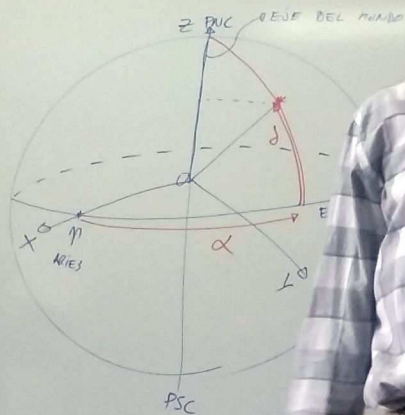
ESFERICAS (α, δ)
RECTANGULARES (X, Y, Z)

ASCENSION RECTA $(0^h, 24^h)$
DECLINACION $(-90^\circ, +90^\circ)$

$$\begin{cases} X = \cos \delta \cdot \cos \alpha \\ Y = \cos \delta \cdot \sin \alpha \\ Z = \sin \delta \end{cases}$$



SISTEMA DE COORD. ECUATORIAL

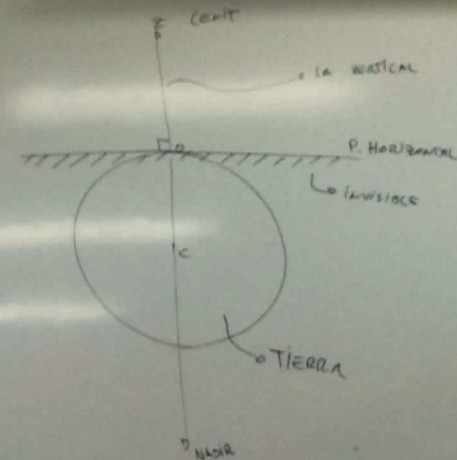


ESFÉRICAS (α, δ)

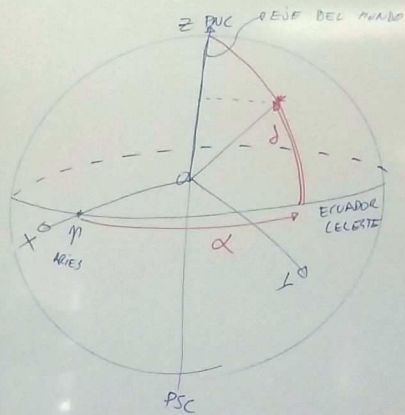
RECTANGULARES
(x, y, z)

α : ASCENSION RECTA ($0^h, 24^h$)

δ : DECLINACION ($-90^\circ, +90^\circ$)



SISTEMA DE COORD. ECUATORIALES

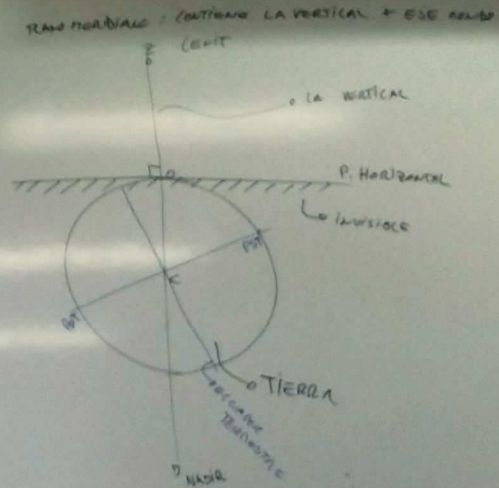


$$X = \cos \delta \cos \alpha$$

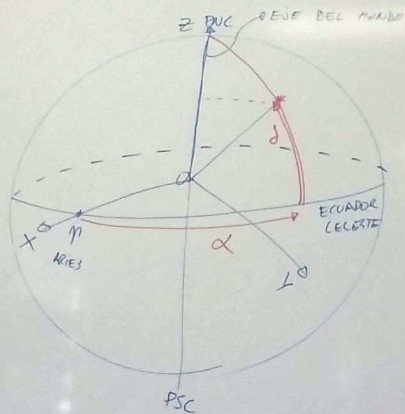
$$Y = \cos \delta \sin \alpha$$

$$Z = \sin \delta$$

α : ASCENSION RECTA ($0^h, 24^h$)
 δ : DECLINACION ($-90^\circ, +90^\circ$)



SISTEMA DE COORD. ECUATORIALES



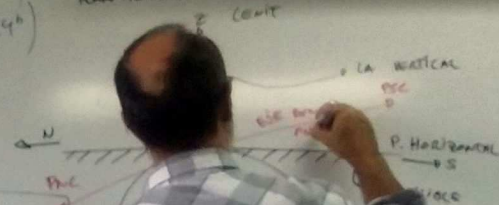
ESFERICAS (α, δ)
 RECTANGULARES (x, y, z)

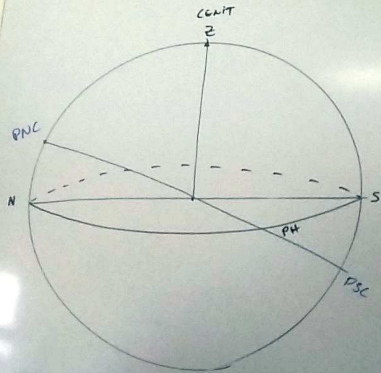
$$\begin{cases} X = \cos \delta \cdot \cos \alpha \\ Y = \cos \delta \cdot \sin \alpha \\ Z = \sin \delta \end{cases}$$

α : ASCENSION RECTA $(0^h, 24^h)$
 δ : DECLINACION $(-90^\circ, +90^\circ)$

MERIDIANA: P. Horiz \cap P. Meridiano
 LINEA N-S

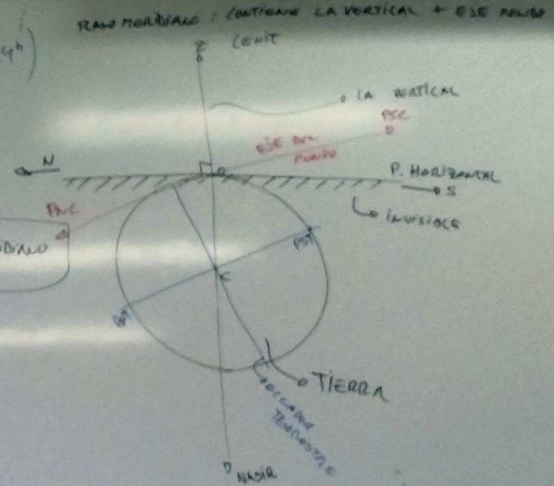
TRANS-MERIDIANO: CONTIENE LA VERTICAL + EJE MUNDO



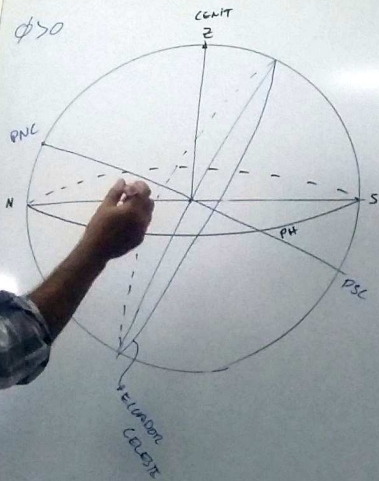


α : ASCENSION RECTA ($0^h, 24^h$)
 δ : DECLINACION ($-90^\circ, +90^\circ$)

MERIDIANA: P. Horiz \cap P. Meridiano
 LINEA N-S



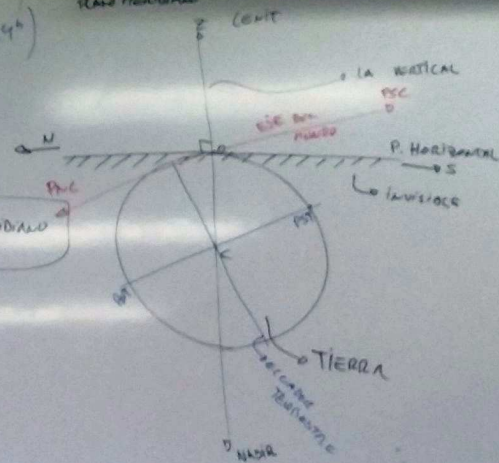
$\phi > 0$



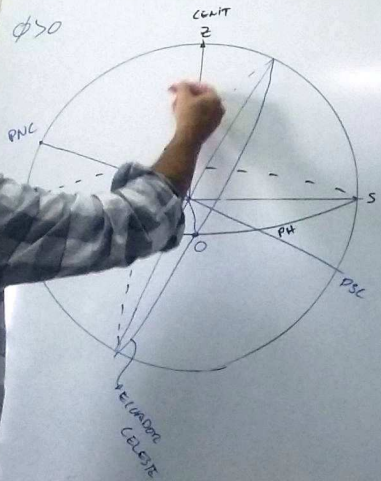
α : ASCENSION RECTA ($0^h, 24^h$)
 δ : DECLINACION ($-90^\circ, +90^\circ$)

MERIDIANA: P. Horiz \cap P. Meridiano
 LINEA N-S

TRANSVERSAL: CONTIENE LA VERTICAL + EJE NADIR



$\phi > 0$

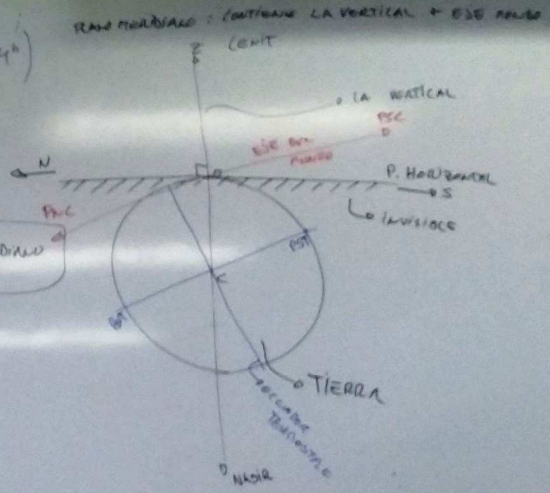


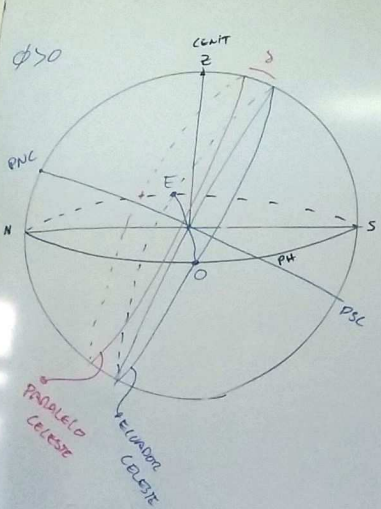
20/3/2018 13:15m

$$\left. \begin{aligned} \delta_0 &= 0^\circ \text{ (EQUADOR CELESTE)} \\ \alpha_0 &= 0^h \end{aligned} \right\} \downarrow \text{PARÓ POR EL PUNTO ARIETES}$$

α : ASCENSION RECTA ($0^h, 24^h$)
 δ : DECLINACION ($-90^\circ, +90^\circ$)

MERIDIANA: P. Horiz \cap P. Meridiano
 LINEA N-S





20/3/2018 13:15h

$\delta_0 = 0^\circ$ (EQUADOR CELESTE)

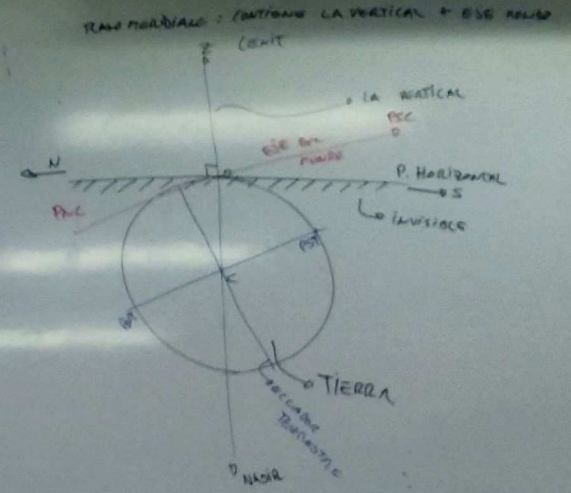
$\alpha_0 = 0^h$

↓ PASÓ POR EL PUNTO ARIETES

φ

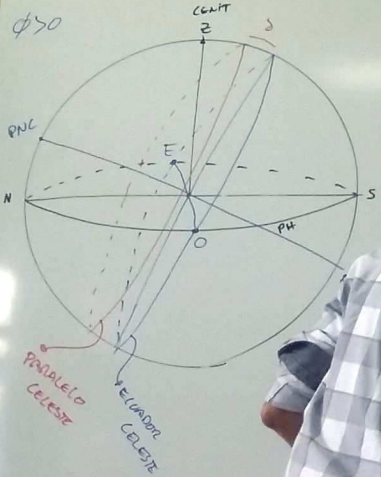
TEO. LATITUD

ALTURA DE PNC = ϕ



20/3/2018 13:15

$\phi > 0$



$$\delta_0 = 0^\circ \quad (\text{EQUADOR CELESTE})$$

$$\alpha_0 = 0^h$$

PLANO AN EL PLANO MERIDIANO

PLANOS HORIZONTALES

+ VERTICAL

A

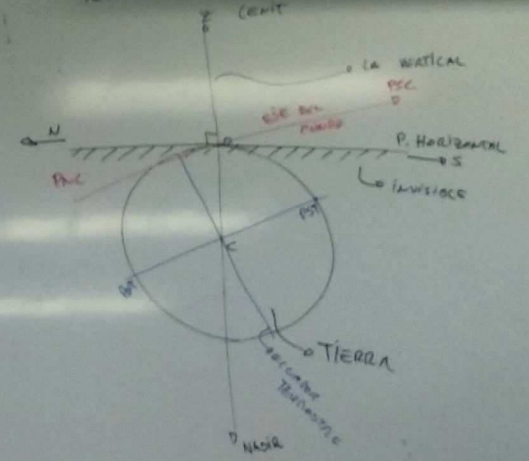
a

$$(-30^\circ, +30^\circ)$$

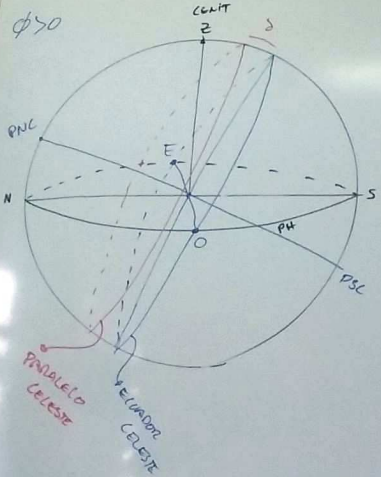
TEO. LATITUD

$$\text{ALTURA DE PNC} = \phi$$

PLANO MERIDIANO : CONTIENE LA VERTICAL + EJE ROTACION



$\phi > 0$



20/3/2018 13:15

$$\delta_0 = 0^\circ \text{ (Ecuador Celeste)}$$

$$\alpha_0 = 0^h$$

↓
Pasó por el punto arriba

COORDENADAS HORIZONTALES

P. Horiz + VERTICAL

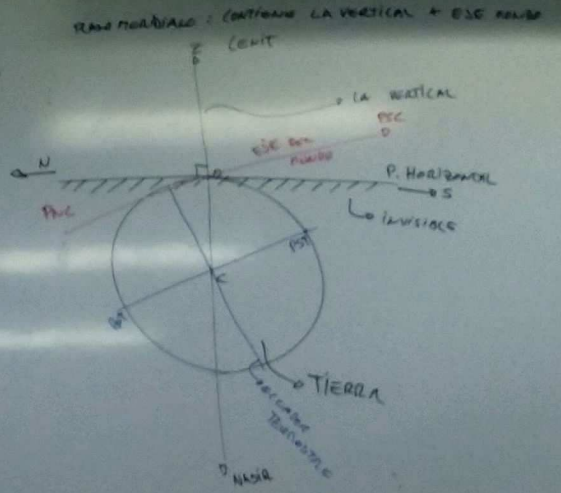
ACIUT : A $(0^\circ, 360^\circ)$ SENTIDO NOSE

ALTURA : a $(-90^\circ, +90^\circ)$

↓
NADIE → CENIT

TEO. LATITUD

ALTURA DE PNC = ϕ

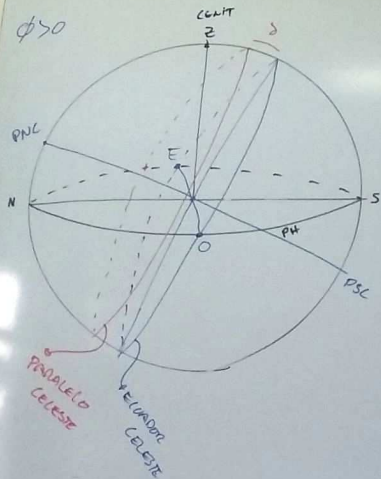


20/3/2018 13:15

$$\delta_0 = 0^\circ \quad (\text{EQUINOXIO})$$

$$\alpha_0 = 0^h$$

↓ PASÓ POR EL PUNTO ARIES
↑



COORDENADAS HORIZONTALES

P. HORIZ + VERTICAL

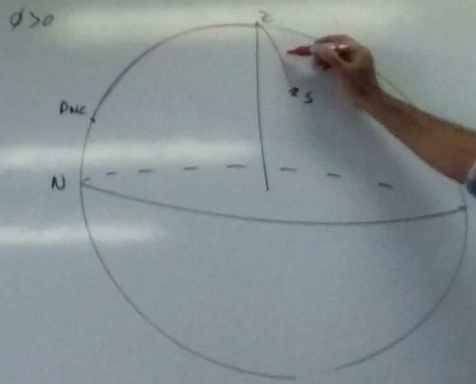
ACIUT : A $(0^\circ, 360^\circ)$ SENTIDO NOSE

ALTURA : a $(-90^\circ, +90^\circ)$
 ↓ NADIR ↑ CENIT

TEO. LATITUD

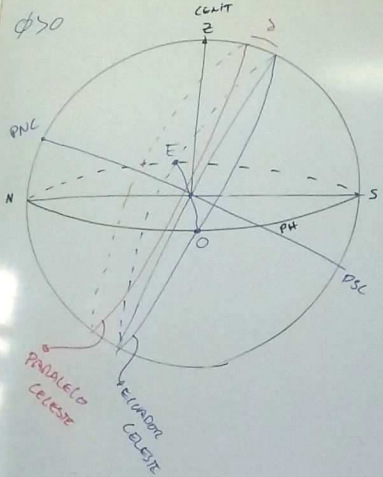
ALTURA DE PNC = ϕ

TRIÁNGULO DE POSICIÓN



20/3/2018 13:15

(EJERCICIO)



HORIZONTALES

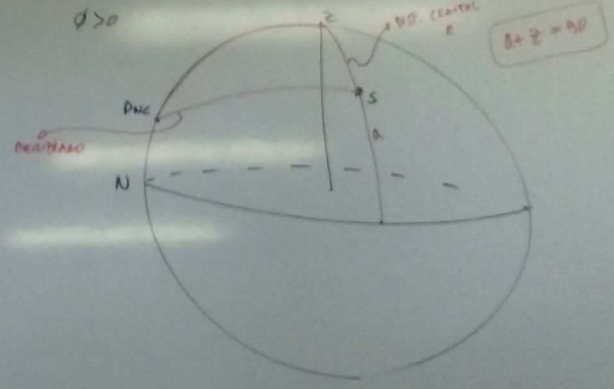
0°, 360° SENTIDO NOSE

90° +

TEO. LATITUD

ALTURA DE PNC = ϕ

TRIÁNGULO DE POSICIÓN

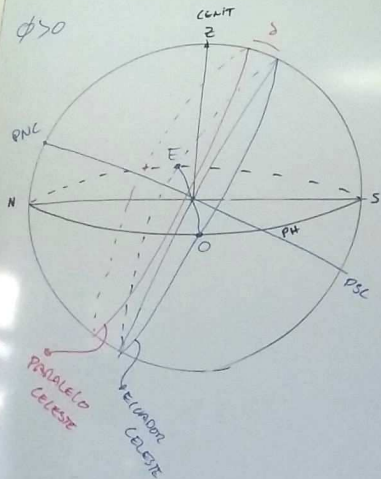


20/3/2018 13:15

$$\delta_0 = 0^\circ \quad (\text{Ecuador Celeste})$$

$$\alpha_0 = 0^h$$

↓ PASÓ POR EL PUNTO ARIETES



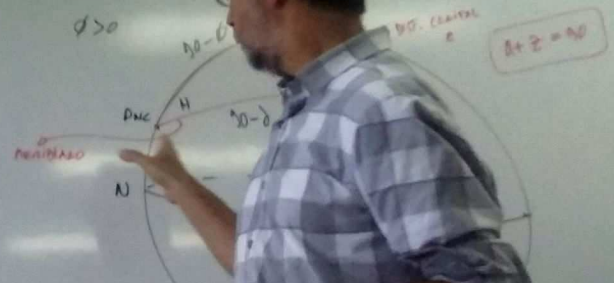
COORDENADAS HORIZONTALES

- P. HORIZ + VERTICAL
- ACIUT : A $(0^\circ, 360^\circ)$ SENTIDO NOSE
- ALTURA : a $(-90^\circ, +90^\circ)$
 - ↓ NADIR
 - CENIT
- DIST. CENITAL z $(0^\circ, 180^\circ)$

TEO. LATITUD

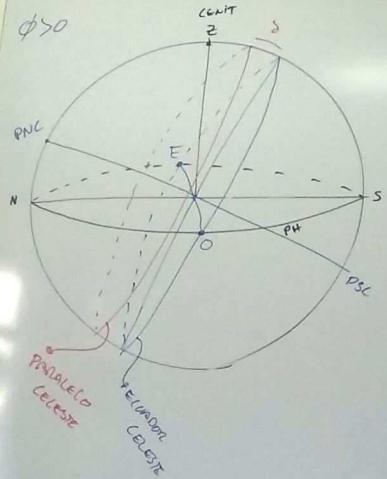
ALTURA DE PNC = ϕ

TRIANGULO POSICION



20/3/2018 13:10

$\phi > 0$



TEO. LATITUD

ALTURA DE PNC = ϕ

(0^h, 24^h)

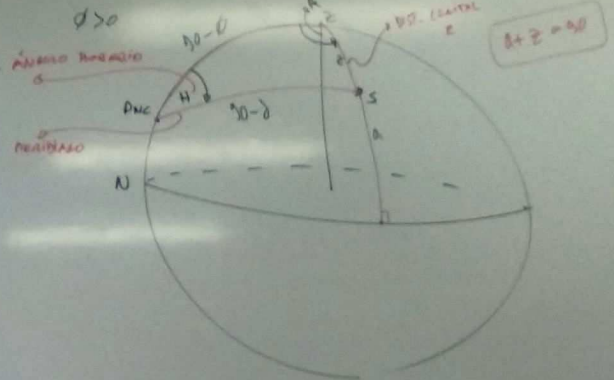
HORIZONTALES

360° SENTIDO NOSE

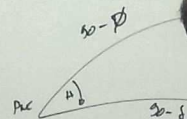
0° + 90°

→ Zenit

TRIÁNGULO DE POSICIÓN



Δ. Posición



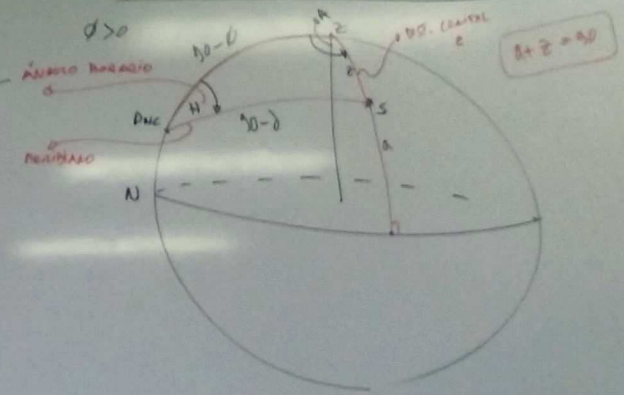
T. coseno :

TEO. LATITUD

ALTURA DE PNC = ϕ

(0^h.24^h)

TRIÁNGULO DE POSICIÓN

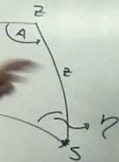


Δ. Posición

T. ROSATI :

$$\cos z = \sin \phi \cdot \sin \delta + \cos \phi \cdot \cos \delta \cdot \cos H$$

PNC

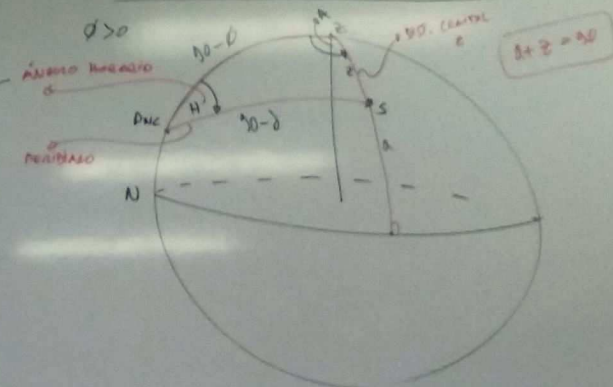


TEO. LATITUD

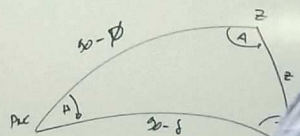
ALTURA DE PNC = ϕ

(0^h.24^h)

TRIÁNGULO DE POSICIÓN



Δ. Posición



$$\cos Z = \sin \phi \cdot \sin \delta + \cos \phi \cdot \cos \delta \cdot \cos H$$

$$= \frac{\sin H}{\sin Z}$$

$$\cos \phi \cdot \cos \delta \cdot \cos H$$

$$- \tan \phi \cdot \tan \delta$$

S, P

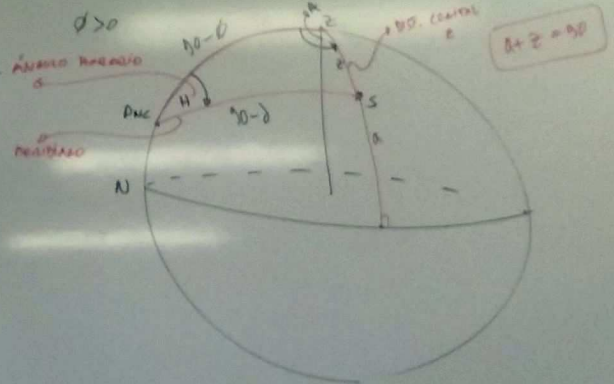
TEO. LATITUD

$$\text{ALTURA DE PNC} = \phi$$

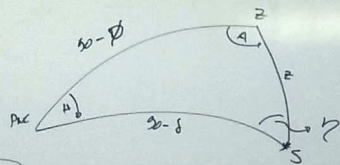
(0^h.24^h)

si $\delta = 0$

TRIÁNGULO DE POSICIÓN



Δ. Posición



CASO 1)

$H(m) \equiv$ TIEMPO SIDÉREO LOCAL

T. COSENO :

$$\cos z = \sin \phi \cdot \sin \delta + \cos \phi \cdot \cos \delta \cdot \cos H$$

$$\frac{\sin A}{\cos \delta} = \frac{\sin H}{\sin z}$$

SALIDA Y PUESTA

$$z = 50^\circ$$

$$0 = \sin \phi \cdot \sin \delta + \cos \phi \cdot \cos \delta \cdot \cos H$$

$$\Rightarrow \cos H = -\frac{\tan \phi \cdot \tan \delta}{\sin \phi \cdot \sin \delta}$$

S.P

TEO. LATITUD

ALTURA DE PNC = 0

(0h, 24h)

si $\delta = 0$

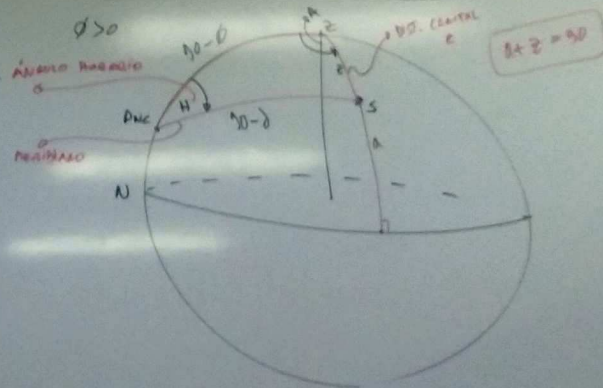
$$\cos H_{sup} = 0$$

$$\Rightarrow H = 90^\circ$$

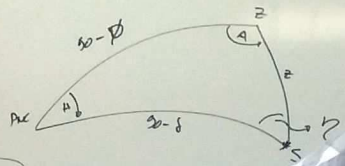
6h

15° → 1h (360° → 24h)

TRIÁNGULO DE POSICIÓN

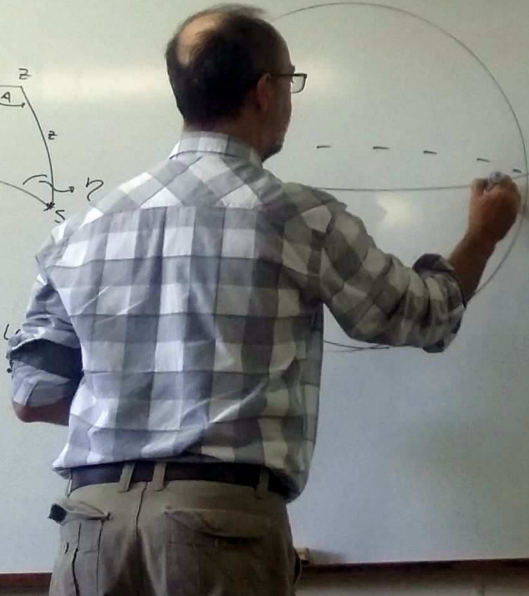


Δ. Posición



CASO η

$H(\eta) \equiv$ TIEMPO SIDÉREO L



TEO. LATITUD

ALTURA DE PNC = ϕ

($0^h, 24^h$)

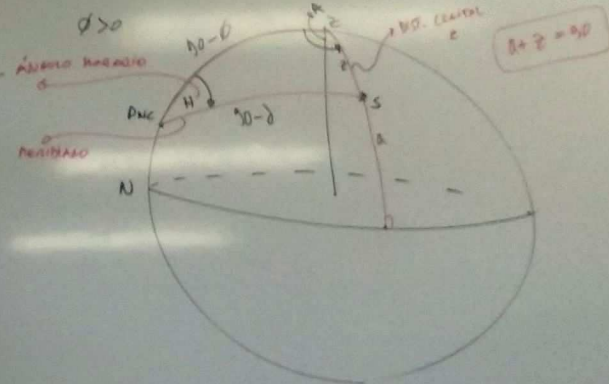
si $\delta = 0$

$\hookrightarrow H_{sur} = 0$

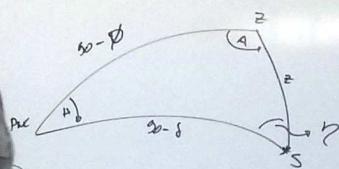
$\Rightarrow H = 90^\circ$
6h

$15^\circ \rightarrow 1^h$ ($360^\circ \rightarrow 24^h$)

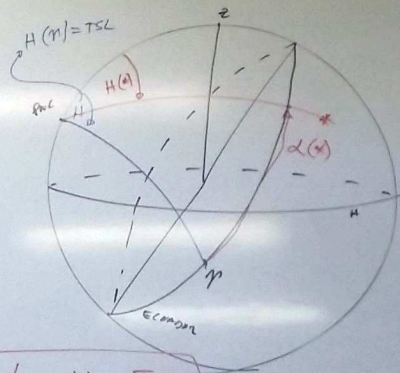
TRIÁNGULO DE POSICIÓN



Δ. Posición



TIEMPO SIDÉREO LOCAL



$$\alpha_* + H_* = TSL$$

TEO. LATITUD

ALTURA DE PNC = 0

(0h, 24h)

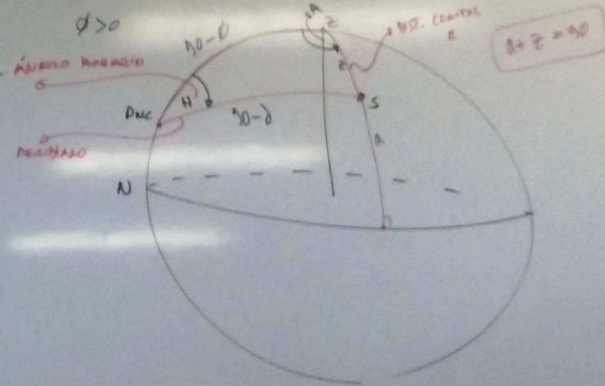
si $\delta = 0$

$\Rightarrow H_{sup} = 0$

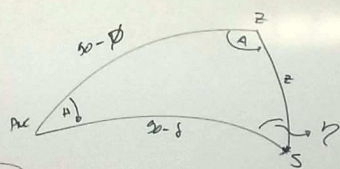
$\Rightarrow H = 90^\circ$
6h

15° → 1h (360° → 24h)

TRIÁNGULO DE POSICIÓN

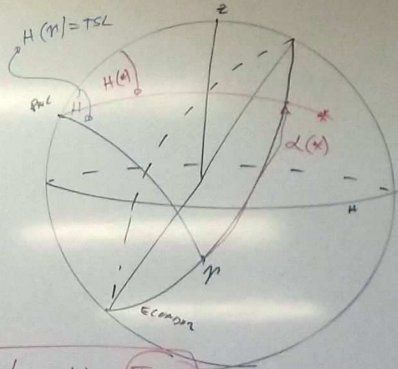


Δ. Posición



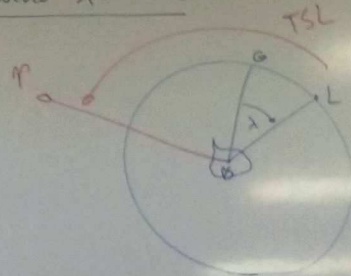
CASO μ

$H(\mu) \equiv$ TIEMPO SIDÉREO LOCAL

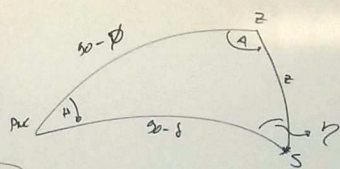


$\alpha_* + H_* = TSL$
 RELOJ

VINCULO $\lambda \leftrightarrow TSL$

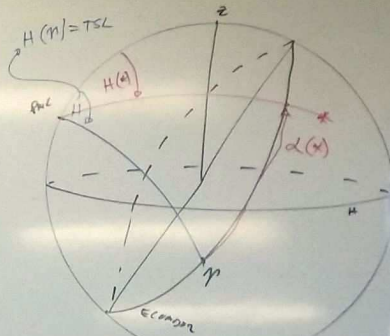


Δ. Posición



CASO η

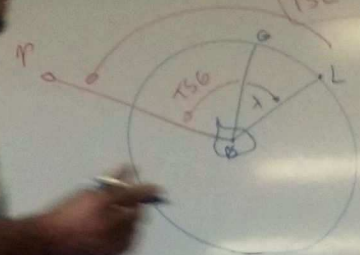
$H(\eta) \equiv$ TIEMPO SIDÉREO LOCAL



$\alpha_* + H_* = TSL$

RELOJ

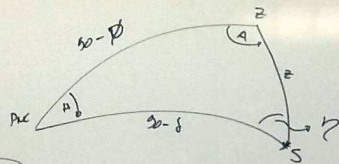
CULO $\lambda \rightarrow TSL$



$TSL = TSG + \lambda$

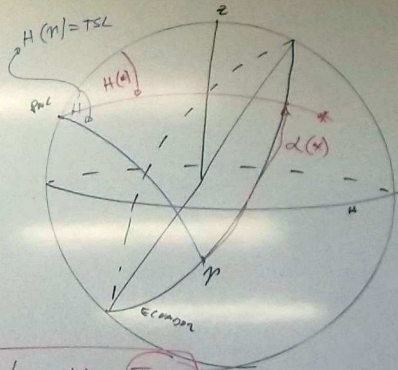
RELOJ "universal"

Δ. Posición



CASO η

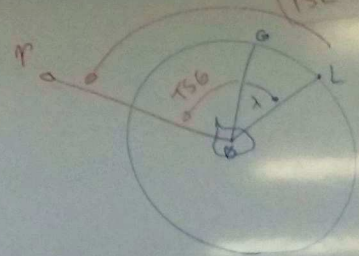
$H(\eta) \equiv$ TIEMPO SIDÉREO LOCAL



$\alpha_* + H_* = TSL$

RELOJ

VINCULO $\lambda \leftrightarrow TSL$



$TSL = TSG + \lambda$

Reloj "Universal"

FÓRMULA

DADA FECHA
HORA

\rightarrow TSG