given:	**needed:**
coordinates = {x, y, z}	angle ω
length A	angle φ
length E	angleθ
length F	

$$C = \sqrt{Z^2 + Y^2}$$

$$D = \sqrt{C^2 - A^2}$$

$$= \sqrt{\sqrt{Z^2 + Y^2} - A^2}$$

$$\alpha = \tan^{-1}\frac{Z}{Y}$$

$$\beta = \tan^{-1}\frac{D}{A}$$

$$\omega = \alpha + \beta$$

$$G = \sqrt{D^2 + X^2}$$

$$G^2 = E^2 + F^2 - 2EF \times \cos\phi$$

$$\phi = \cos^{-1}\frac{G^2 - E^2 - F^2}{-2EF}$$

$$\gamma = \tan^{-1}\left(\frac{X}{D}\right)$$

$$\delta = \sin^{-1}\left(\frac{\sin\phi}{G} \times F\right)$$

$$\theta = \gamma + \delta$$

$$\omega = \tan^{-1}\frac{Z}{Y} + \tan^{-1}\frac{\sqrt{\sqrt{Z^2 + Z^2} - A^2}}{A}$$

$$\phi = \cos^{-1}\frac{G^2 - E^2 - F^2}{-2EF}$$

$$\theta = \tan^{-1}\left(\frac{X}{D}\right) + \sin^{-1}\left(\frac{\sin\left(\cos^{-1}\left(\frac{G^2 - E^2 - F^2}{-2EF}\right)\right)}{G} \times F\right)$$