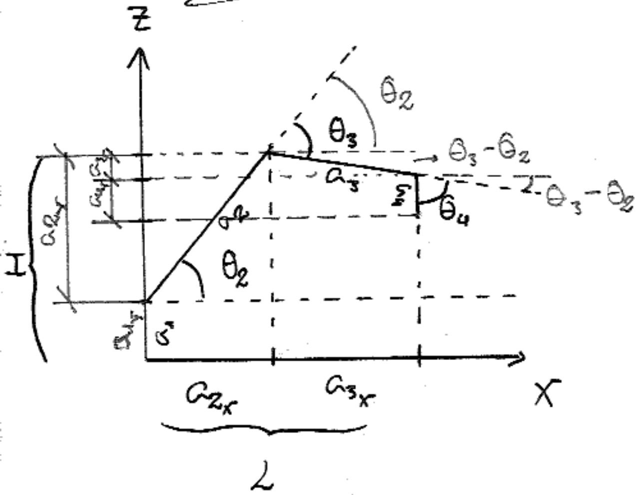
$$X_e = \left(142 \cdot \cos(\theta_2) + 158'9 \cdot \cos(\theta_2+\theta_3) + 44'5 \cdot \cos(\theta_2+\theta_3+\theta_4) + 106'1\right) \cdot \cos(\theta_1)$$

$$Y_e = \left(142 \cdot \cos(\theta_2) + 158'9 \cdot \cos(\theta_2+\theta_3) + 44'5 \cdot \cos(\theta_2+\theta_3+\theta_4) + 106'1\right) \cdot \sin(\theta_1)$$

$$Z_e = -142 \cdot \sin(\theta_2) - 158'9 \cdot \sin(\theta_2+\theta_3) - 44'5 \cdot \sin(\theta_2+\theta_3+\theta_4) + 13'2$$

$$X_e^2 + Y_e^2 + Z_e^2 = -3748'8 \cdot \sin(\theta_2) - 4194'96 \cdot \sin(\theta_2+\theta_3) - 1174'8 \cdot \sin(\theta_2+\theta_3+\theta_4) +$$
$$+ 30132'4 \cdot \cos(\theta_2) + 45127'6 \cdot \cos(\theta_3) + 14142'1 \cdot \cos(\theta_4) +$$
$$+ 33718'58 \cdot \cos(\theta_2+\theta_3) + 12638 \cdot \cos(\theta_3+\theta_4) + 9442'9 \cdot \cos(\theta_2+\theta_3+\theta_4)$$
$$+ 58824'91$$



$$L = a_{2x} + a_{3x} = X_e$$

$$H = (a_{1y} + a_{2y}) - (a_{3y} + a_{4y}) = Z_e$$

$$a_{2x} = a_2 \cdot \cos(\theta_2) \quad // \sqrt{a_2^2 - \sin^2(\theta_2) \cdot a_2^2}$$

$$a_{3x} = a_3 \cdot \cos(\theta_3 - \theta_2) \quad // \sqrt{a_3^2 - a_3^2 \cdot \sin^2(\theta_3-\theta_2)}$$

$$\theta_4 = -(\theta_3 - \theta_2) + 90^\circ \, (\pi/2) =$$

$$= 90 - \theta_3 + \theta_2 \qquad \boxed{\theta_2 + \theta_3 = 90 - \theta_4}$$

$$a_{1y} = a_1$$

$$a_{2y} = a_2 \cdot \sin(\theta_2) \quad // \sqrt{-a_2^2 \cdot \cos^2(\theta_2) + a_2^2}$$

$$a_{3y} = a_3 \cdot \sin(\theta_3 - \theta_2) \quad // \sqrt{-a_3^2 \cdot \cos^2(\theta_3-\theta_2) + a_3^2}$$

$$a_{4y} = a_4$$

$$\phi_e = 90^\circ \quad \left(\theta_4 + (\theta_3 - \theta_2) = \theta_4 + \theta_3 - \theta_2 = \right.$$
$$\left. = 90 - \cancel{\theta_3} + \cancel{\theta_2} + \cancel{\theta_3} - \cancel{\theta_2} = 90\right)$$

$$X_e = a_2 \cdot \cos(\theta_2) + a_3 \cdot \cos(\theta_3 - \theta_2)$$

$$Z_e = (a_1 + a_2 \cdot \sin(\theta_2)) - (a_3 \cdot \sin(\theta_3 - \theta_2) + a_4)$$

$$X_e = \left(a_2 \cdot \cos(\theta_2) + a_3 \cdot \cos(\theta_2+\theta_3) + a_4 \cdot \cos(\theta_1+\theta_2+\theta_3) + a_1\right) \cdot \cos(\theta_1)$$

$$Z_e = -a_2 \cdot \sin(\theta_2) - a_3 \cdot \sin(\theta_2+\theta_3) - a_4 \cdot \sin(\theta_2+\theta_3+\theta_4) + 13'2$$

$$-a_2 \cancel{\sin}(\theta_2) - \cancel{a_3 \cdot \sin(90-\theta_4)} - a_4 \cdot \sin(90) + 13'2 = a_1 + a_2 \cdot \sin(\theta_2) - \cancel{a_3 \cdot \sin(90-\theta_4)} - a_4$$

$$-2a_2 \cdot \sin(\theta_2) - a_4 \sin(90) + 13'2 = a_1 - a_4 ; \quad -2a_2 \cdot \sin(\theta_2) - \cancel{a_4} + 13'2 = a_1 - \cancel{a_4} ;$$

$$\sin(\theta_2) = -\frac{a_1 - 13'2}{2a_2} \Rightarrow \sin(\theta_2) = -\frac{106'1 - 13'2}{2 \cdot 142} ; \quad \sin(\theta_2) = -\frac{929}{2840} ; \quad \theta_2 \cong -19'093^\circ$$