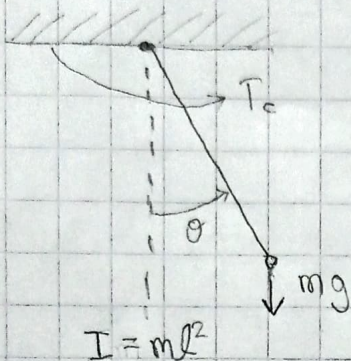


Ej:



- $m = 1$

- $l = 1$

- $g = 9.8$

$$\rightarrow I \ddot{\theta} = T_c - mg l \sin \theta \rightarrow \ddot{\theta} = \frac{T_c}{ml^2} - \frac{g}{l} \sin \theta$$

• Variables de estado:

$$q_1 = \theta, \quad q_2 = \dot{q}_1, \quad \dot{q}_2 = \ddot{\theta}$$

$$\therefore \dot{q}_2 = \frac{T_c}{ml^2} - \frac{g}{l} \sin q_1$$

$$\begin{bmatrix} \dot{q}_1 \\ \dot{q}_2 \end{bmatrix} = \begin{bmatrix} 0 & 1 \\ -\frac{g}{l} \sin q_1 & 0 \end{bmatrix} \begin{bmatrix} q_1 \\ q_2 \end{bmatrix} + \begin{bmatrix} 0 \\ \frac{1}{ml^2} \end{bmatrix} T_c \quad \text{y} \quad q_1 = \begin{bmatrix} 1 & 0 \end{bmatrix} \begin{bmatrix} q_1 \\ q_2 \end{bmatrix}$$