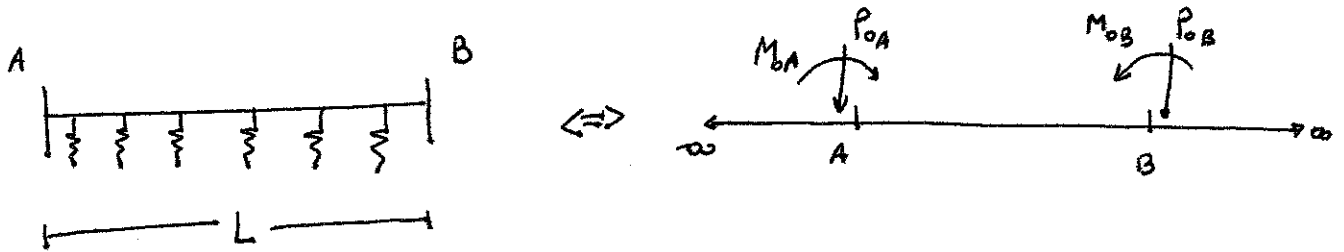


# Vigas flexibles de largo finito

## Método de solución



⇒ Se debe encontrar  $P_A, P_B, M_A, M_B$  derivado del sistema de carga real considerando la viga como infinita.

Tenemos 2 condiciones de borde para cada extremo de la viga

## Viga finita con extremos libres

$$M_A + \frac{P_{OA}}{4\lambda} + \frac{M_{OA}}{2} + \frac{P_{OB}}{4\lambda} C_{\lambda L} + \frac{M_{OB}}{2} D_{\lambda L} = 0$$

$$V_A - \frac{P_{OA}}{2} - \frac{M_{OA} \cdot \lambda}{2} + \frac{P_{OB}}{2} D_{\lambda L} + \frac{M_{OB} \cdot \lambda \cdot A_{\lambda L}}{2} = 0$$

$$M_B + \frac{P_{OA}}{4\lambda} C_{\lambda L} + \frac{P_{OB}}{4\lambda} + \frac{M_{OA}}{2} D_{\lambda L} + \frac{M_{OB}}{2} = 0$$

$$V_B - \frac{P_{OA}}{2} D_{\lambda L} - \frac{\lambda M_{OA}}{2} A_{\lambda L} + \frac{P_{OB}}{2} + \frac{\lambda M_{OB}}{2} = 0$$

discrete time in discrete space

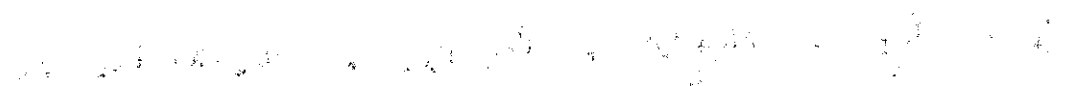
discrete time in discrete space



discrete time in discrete space

discrete time in discrete space

discrete time in discrete space



$\Rightarrow$

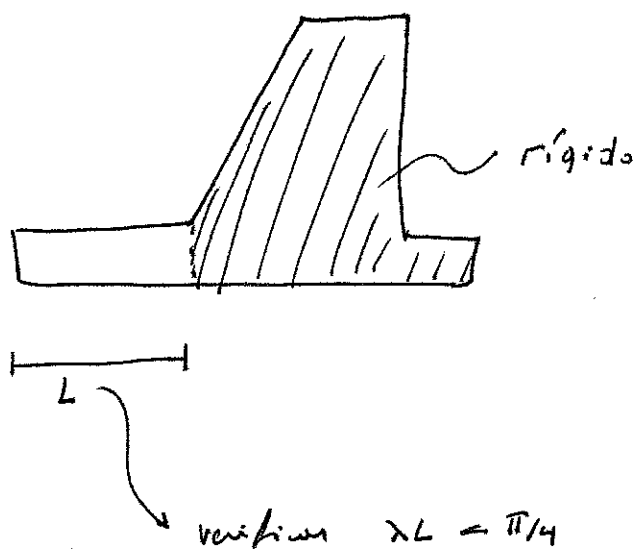
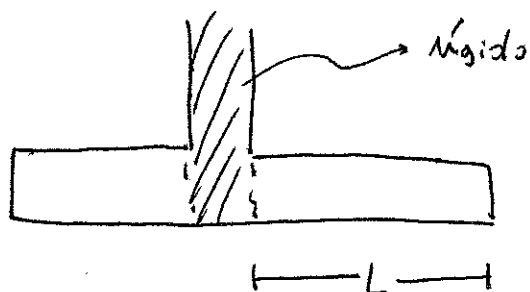
$$\begin{bmatrix}
 1/2 & D_{\lambda L} & -\lambda/2 \\
 -\frac{D_{\lambda L}}{2} & 1/2 & -\lambda/2 A_{\lambda L} \\
 \frac{1}{4\lambda} & \frac{C_{\lambda L}}{4\lambda} & 1/2 \\
 \frac{C_{\lambda L}}{4\lambda} & \frac{1}{4\lambda} & \frac{D_{\lambda L}}{2}
 \end{bmatrix}
 \begin{bmatrix}
 \frac{\lambda A_{\lambda L}}{2} \\
 \lambda/2 \\
 \frac{D_{\lambda L}}{2} \\
 1/2
 \end{bmatrix}
 \begin{bmatrix}
 P_{0A} \\
 P_{0B} \\
 M_{0A} \\
 M_{0B}
 \end{bmatrix}
 =
 \begin{bmatrix}
 -V_A \\
 -V_B \\
 -M_A \\
 -M_B
 \end{bmatrix}$$

$\Rightarrow$  obtenemos  $P_{0A}$ ,  $P_{0B}$ ,  $M_{0A}$ ,  $M_{0B}$



# Criterios para vigas flexibles o rígidas

- $\lambda L < \pi/4 \rightarrow$  viga rígida



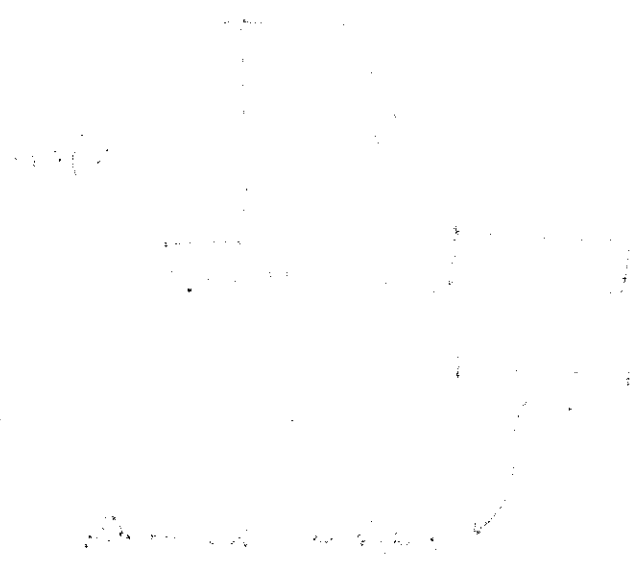
- $\pi/4 < \lambda L < \pi \rightarrow$  viga intermedia

$\rightarrow$  cálculo debe ser hecho para viga de largo finito

- $\lambda L > \pi \rightarrow$  viga infinita o semi-infinita.

1. The first part of the paper is devoted to the study of the properties of the function  $f(x)$  defined by the equation

$$f(x) = \int_0^x \frac{1}{1+t^2} dt$$



2. The second part of the paper is devoted to the study of the properties of the function  $g(x)$  defined by the equation

$$g(x) = \int_0^x \frac{1}{1+t^2} dt$$

3. The third part of the paper is devoted to the study of the properties of the function  $h(x)$  defined by the equation