

LineasDeInfluencia(Static)

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CALCULO DE LINEAS DE INFLUENCIA PARA “n” TRAMOS

LINEAS DE INFLUENCIA PARA PUENTES

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```
[1]: import numpy as np
import matplotlib.pyplot as plt
import ipywidgets as widgets
from IPython.display import display
import itertools

from CORTANTE import LICortante
from MOMENTOS import LIMomento
from REACCIONES import LIREACCION
from CARGACARRIL import CargarCarril
```

 1. DATOS DE INGRESO

```
[2]: # Define tus datos de entrada
LI_Geom = np.array([[0,12.75, 1, 1],
                    [12.75,28.25, 1, 1],
                    [28.25,43.75, 1, 1],
                    [43.75,59.25, 1, 1],
                    [59.25,72, 1, 1]
                    ])

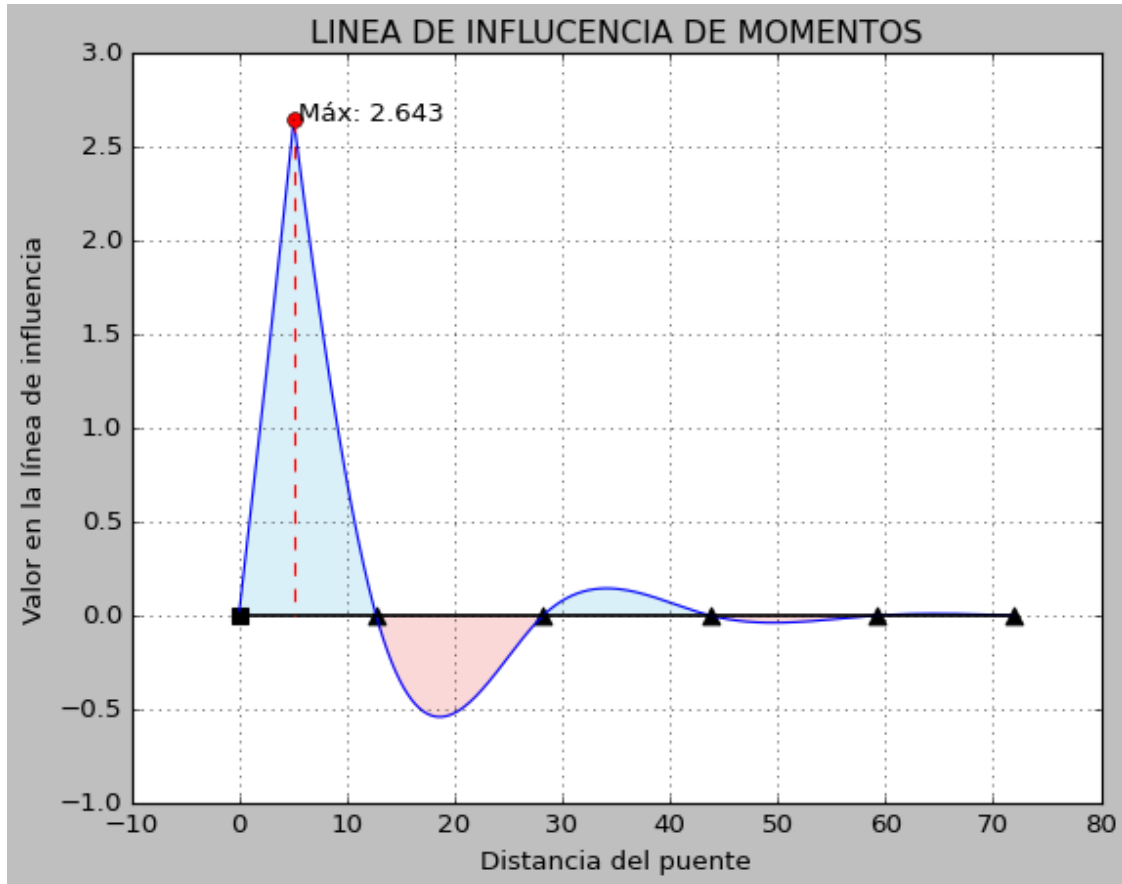
Input2 = 1
Xcoord = 5.1
Step = 0.05
```

 2. LINEA DE INFLUENCIA DE MOMENTOS FLECTORES

```
[3]: LIMom = LIMomento(LI_Geom, Xcoord, Step)
LIMom.plot()

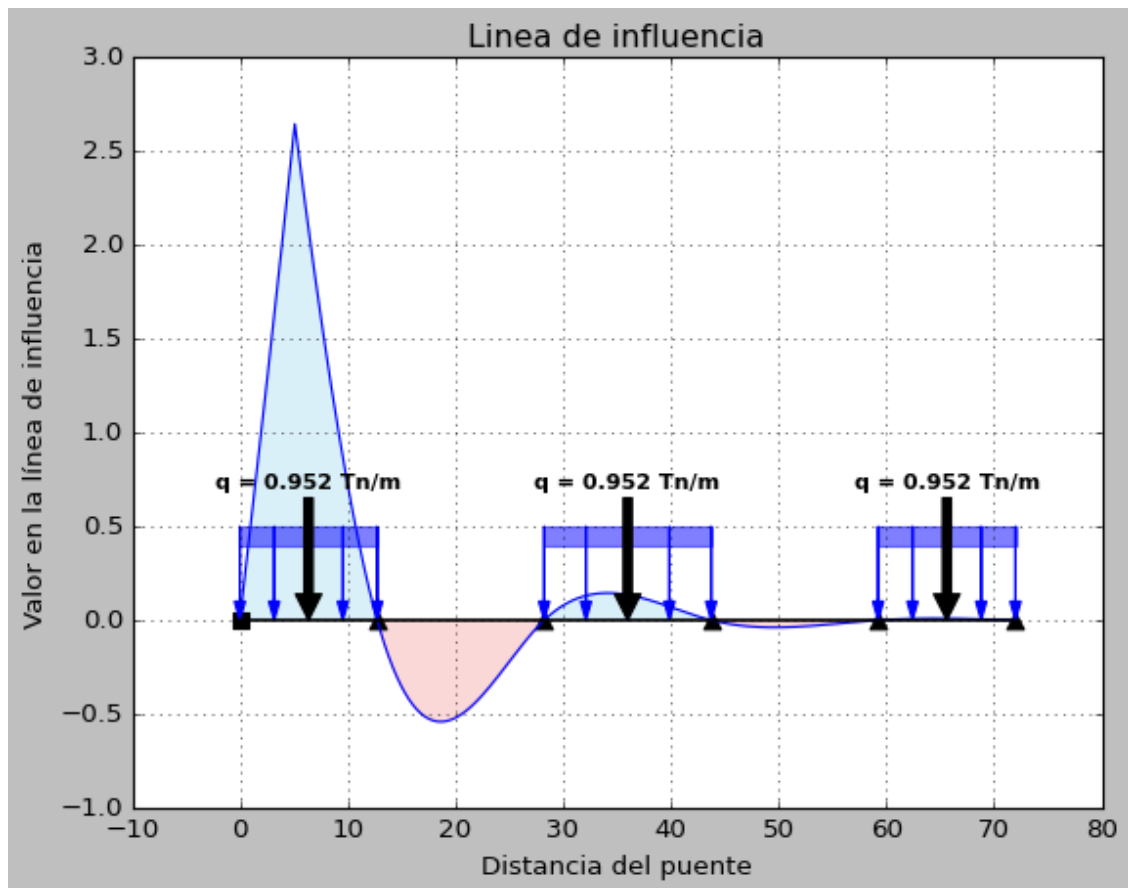
print("Max Value:", LIMom.MaxValue())
print("Area Positiva:", LIMom.AreaPositiva())
```

```
print("Area Negativa:", LIMom.AreaNegativa())
```

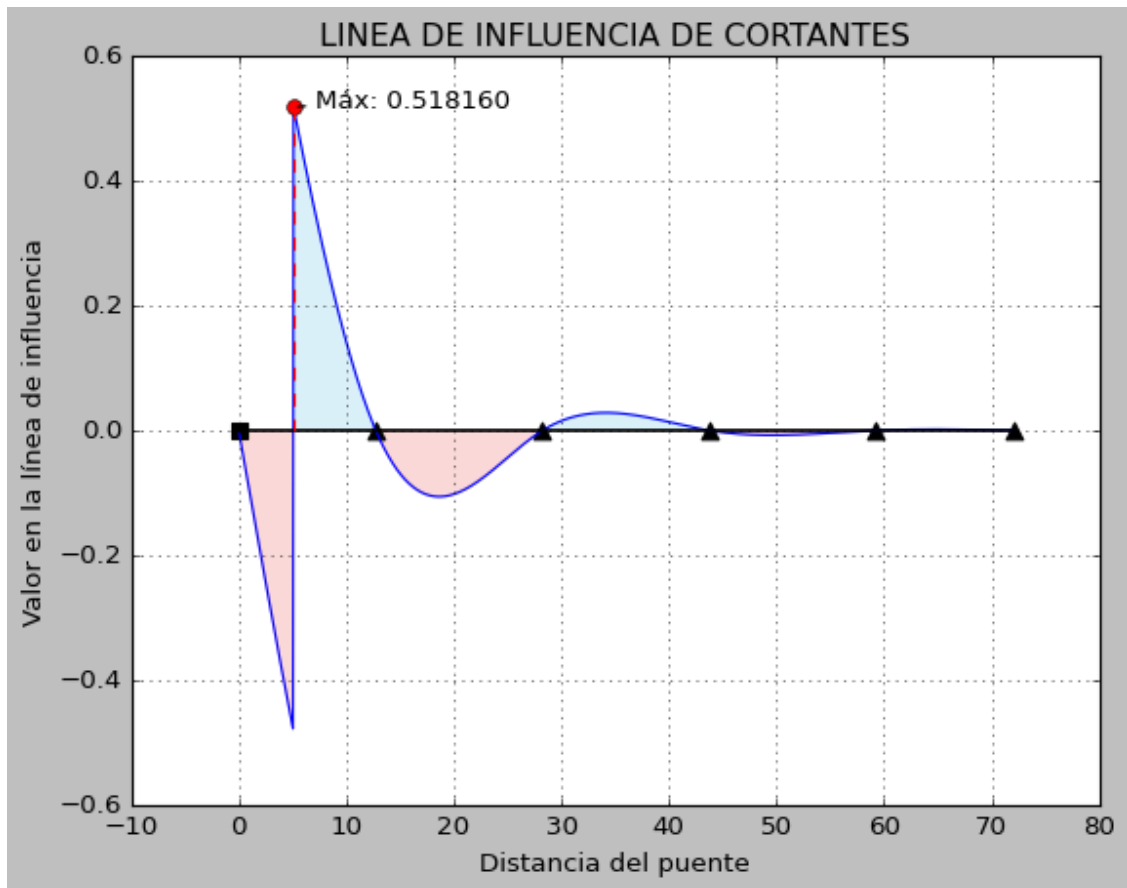


```
Max Value: 2.642617875383044
Area Positiva: 17.020846910112365
Area Negativa: -5.5787808988764045
```

```
[4]: tramos_con_carga = [True, False, True, False, True]
num_fle = 4
VInfo = np.array(LIMom.calculate_VInfo())
#print(VInfo)
# Inicializa la clase y genera el gráfico
cargar_carril = CargarCarril(VInfo, LI_Geom, tramos_con_carga, num_fle)
cargar_carril.graficar()
```

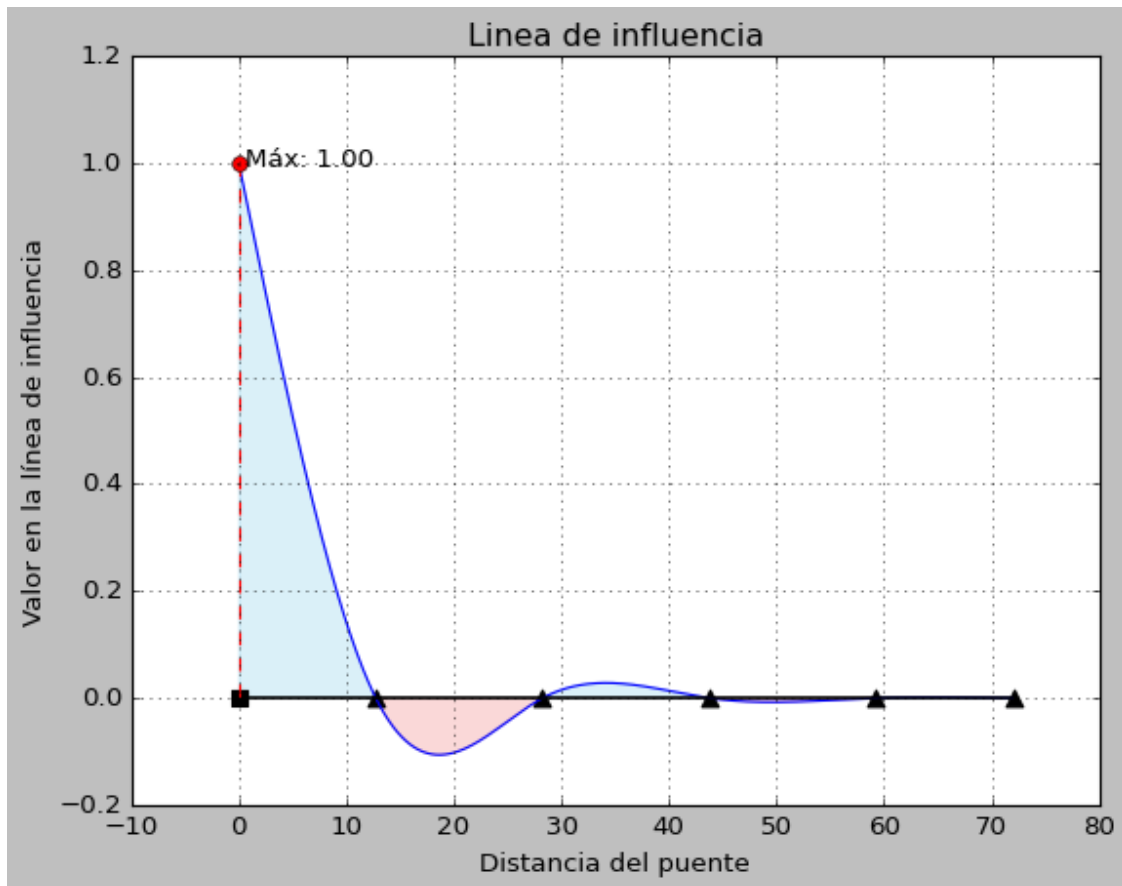


```
[5]: LICor = LICortante(LI_Geom, Xcoord, Step)
    LICor.plot()
    print("Max Value:", LICor.MaxValue())
    print("Area Positiva:", LICor.AreaPositiva())
    print("Area Negativa:", LICor.AreaNegativa())
```



Max Value: 0.5181603677221654
 Area Positiva: 2.0489394631805733
 Area Negativa: -2.330397108036269

```
[6]: LIReac = LIREACCION(LI_Geom, Input2, Step)
LIReac.plot()
print("Max Value:", LIReac.MaxValue())
print("Area Positiva:", LIReac.AreaPositiva)
print("Area Negativa:", LIReac.AreaNegativa)
```



Max Value: 0.9951232682809216
 Area Positiva: 5.862420962767129
 Area Negativa: -1.0938786076228244

```
[7]: # Define tus datos de entrada
LI_Geom = np.array([[0, 20, 1, 1],
                    [20, 50, 1, 1]
                    ])

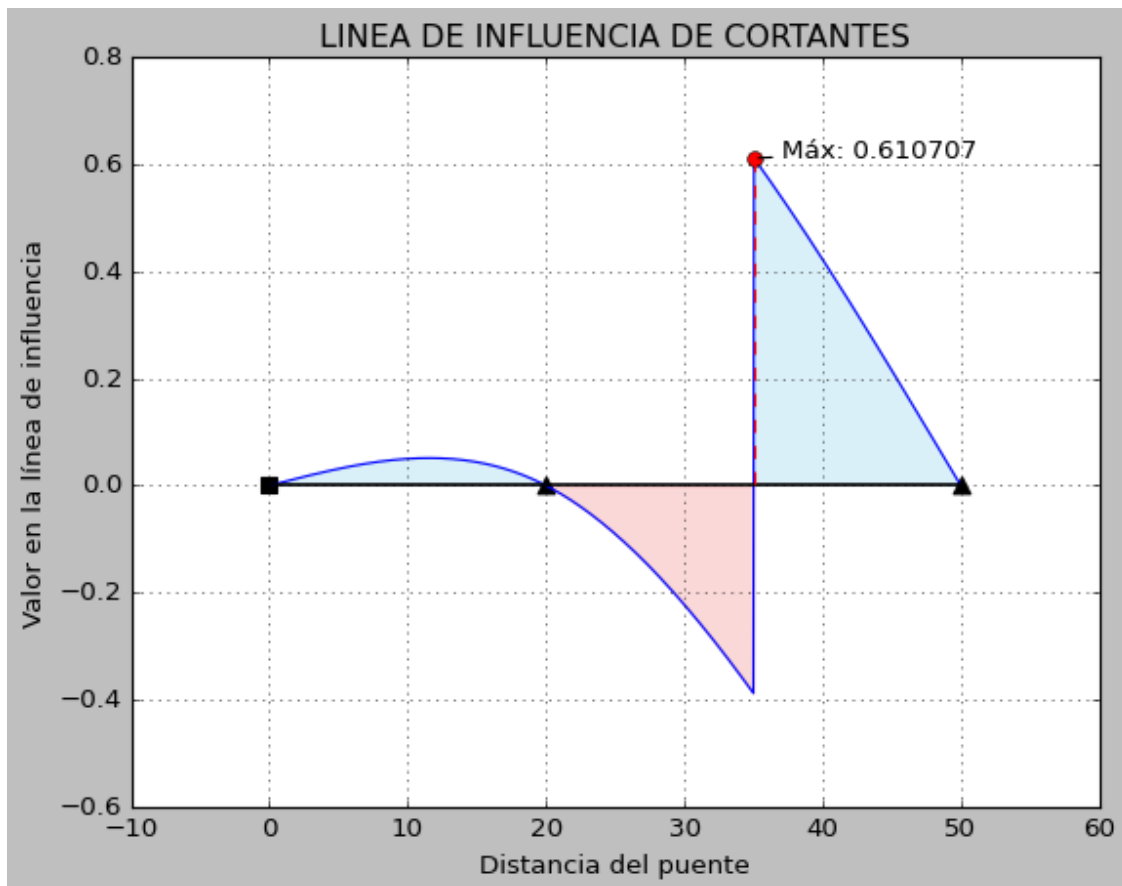
Input2 = 2
Step = 0.05

# Función para actualizar el gráfico
def update_plot(Xcoord):
    LICor = LICortante(LI_Geom, Xcoord, Step)
    LICor.plot()
    plt.show()
    print("Max Value:", LICor.MaxValue())
    print("Area Positiva:", LICor.AreaPositiva())
    print("Area Negativa:", LICor.AreaNegativa())
```

```
# Crear el slider de ipywidgets
xcoord_slider = widgets.FloatSlider(value=35, min=0, max=50, step=0.05,
    description='Xcoord:')

# Usar ipywidgets.interactive para actualizar el gráfico dinámicamente
interactive_plot = widgets.interactive(update_plot, Xcoord=xcoord_slider)

# Mostrar el slider y el gráfico interactivo
display(interactive_plot)
```



Max Value: 0.6107070847222221
 Area Positiva: 5.3857234374999985
 Area Negativa: -2.4940671875000007

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