Plot phasor diagram - small signal stability (plot_phasor_diagram_sss)

31750 Stability and Control in Electric Power Systems

1 Introduction

The library `plot_phasor_diagram_sss` can be used for plotting the shape of oscillatory modes It includes a function for plotting a set of shapes.

The description of the function can be seen below

1.1 Be aware

- The function will sets the limits of the axes in order to show the shapes in the best way. Note that there might be some overlapping of labels if these are changed manually in the script calling the function. Change the limits with caution.

2 Phasors (plot_phasors)

The function `plot_phasors(P,C,L)` plots a number of phasors. Inputs are

- `P` - array with 2 columns and n rows. Each row will contain the x and y variable of the phasors, which will be the real and imaginary part of a phasor.
- `C` - array of length n with the color codes for the phasors.
- `L` - array of length n with the label for each phasor. Label can both be a string and a raw string.

2.1 Example

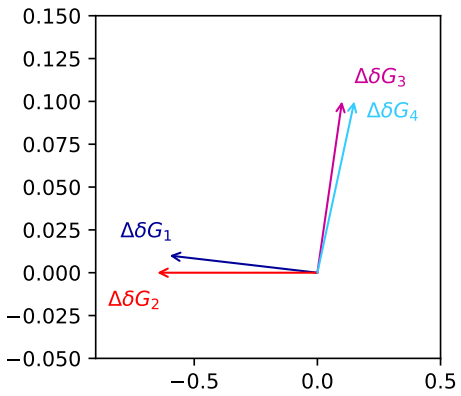
```
import numpy as np
import plot_phasor_diagram_sss as ppd
import matplotlib.pyplot as plt

point1 = -0.6 +0.01j
point2 = -0.65
point3 = 0.1 + 0.1j
point4 = 0.15 + 0.1j

plt.figure(figsize=(3,3), dpi=300)

P = np.array([[np.real(point1), np.imag(point1)],[np.real(point2),np.imag(point2)],[
    np.real(point3), np.imag(point3)],[np.real(point4),np.imag(point4)]])
C = np.array(['#000099','#ff0000','#cc0099','#33ccff'])
L = np.array([r'$\Delta \delta G_1$', r'$\Delta \delta G_2$',r'$\Delta \delta G_3$',
    r'$\Delta \delta G_4$'])
ppd.plot_phasors(P,C,L)

plt.savefig('test1.pdf', bbox_inches='tight', transparent=True)
plt.show()
```

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point1 = -0.6 +0.01j
point2 = -0.65
point3 = 0.1 + 0.1j
point4 = 0.15 + 0.1j

plt.figure(figsize=(3,3), dpi=300)
plt.grid(True)

P = np.array([[np.real(point1), np.imag(point1)],[np.real(point2),np.imag(point2)],[
    np.real(point3), np.imag(point3)],[np.real(point4),np.imag(point4)]])
C = np.array(['#000099','#ff0000','#cc0099','#33ccff'])
L = np.array([r'$\Delta \delta G_1$', r'$\Delta \delta G_2$',r'$\Delta \delta G_3$',
    r'$\Delta \delta G_4$'])
ppd.plot_phasors(P,C,L)

plt.savefig('test2.pdf', bbox_inches='tight', transparent=True)
plt.show()
```