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# -*- coding: utf-8 -*-
"""
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Cap 6
"""

import matplotlib.pyplot as plt
import networkx as nx
import numpy as np
from networkx.algorithms import approximation as app

ps = np.logspace(-4, 0, 9)
L=[]
C=[]
for p in (ps):

    ws=nx.watts_strogatz_graph(1000,10,p)
    c=app.average_clustering(ws,trials=4000)
    l=nx.average_shortest_path_length(ws)
    L.append(l)
    C.append(c)
L = np.array(L) / L[0]
C = np.array(C) / C[0]

fig, ax = plt.subplots(facecolor='teal', alpha=0.1)
plt.style.use('ggplot')
ax.set_title('Andamento di C e L in funzione della probabilità degli archi',
color='orange')
plt.tick_params(labelcolor='tab:orange')

plt.grid(True)
plt.xlabel('Probabilità degli archi', color='orange')
plt.semilogx(ps,C,'g:o',label='C di aggregazione')
plt.semilogx(ps,L,'r:^',label='L di lung. media')
plt.legend(loc='lower left')

```