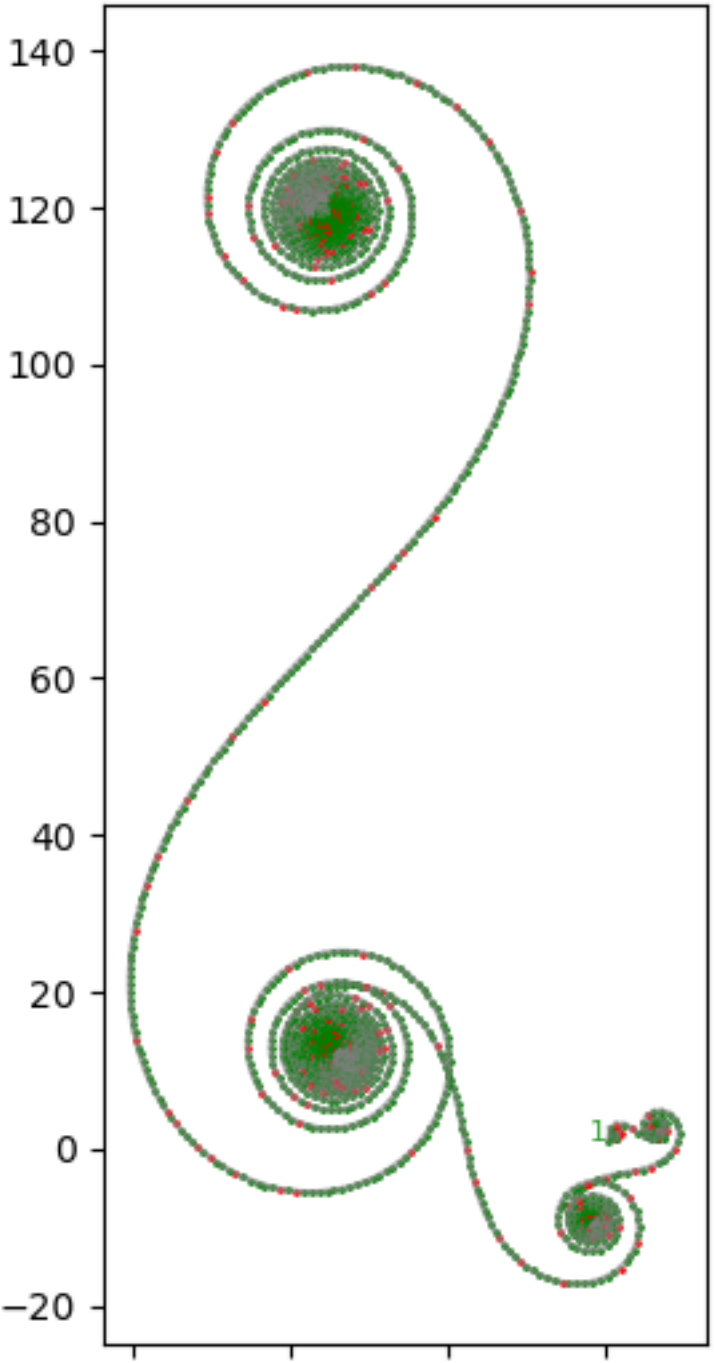
```
import math
from math import pi
from matplotlib import *
import matplotlib.pyplot as plt
from mpmath import *

def prime(atester):
  pastrouve = True ; k = 2 ;
  if (atester in [0,1]): return False ;
  if (atester in [2,3,5,7]): return True ;
  while (pastrouve):
    if ((k * k) > atester): return True
    else:
      if ((atester % k) == 0): return False
      else: k=k+1

fig = plt.figure()
ax = fig.gca()
ax.set_aspect('equal')

n = 10001
somme = 0.0
for k in range(1,n+1):
  t = exp(j*math.pi*k*log(k*math.sqrt(2)))
  somme = somme+t
  if True:
    c = 'r' if prime(k) else 'g'
    plt.plot(somme.real, somme.imag, color=c, marker='o', markersize=1)
  if (k != 1):
    ax.plot([xprec,somme.real],[yprec,somme.imag],'gray', alpha=0.5)
  xprec = somme.real
  yprec = somme.imag

xmin, xmax, ymin, ymax = ax.axis()
print(xmin, xmax, ymin, ymax)
#ax.set_xlim(-80, 40) ;
#ax.set_ylim(-30, 60)
plt.show()
```


140
120
100
80
60
40
20
0
−20
−60
−40
−20
0

```
import math
from math import pi
from matplotlib import *
import matplotlib.pyplot as plt
from mpmath import *

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fig = plt.figure()
ax = fig.gca()
ax.set_aspect('equal')

n = 10001
somme = 0.0
for k in range(1,n+1):
  t = exp(2*j*math.pi*k*log(k)*math.sqrt(2))
  somme = somme+t
  if True:
    c = 'r' if prime(k) else 'g'
    plt.plot(somme.real, somme.imag, color=c, marker='o', markersize=1)
  if (k != 1):
    ax.plot([xprec,somme.real],[yprec,somme.imag],'gray', alpha=0.5)
  xprec = somme.real
  yprec = somme.imag

xmin, xmax, ymin, ymax = ax.axis()
print(xmin, xmax, ymin, ymax)
#ax.set_xlim(-80, 40) ;
#ax.set_ylim(-50, 50)
plt.show()
```
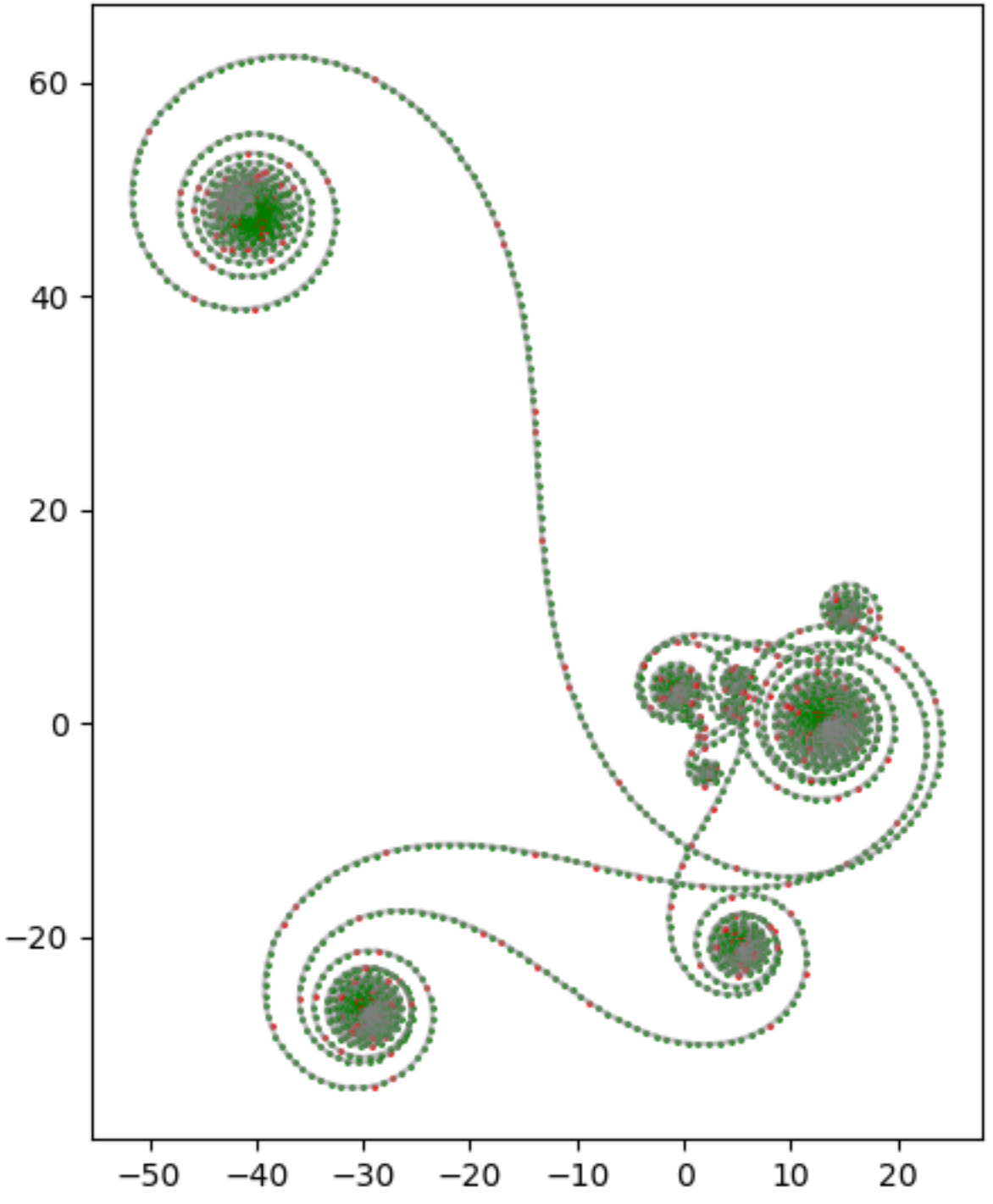
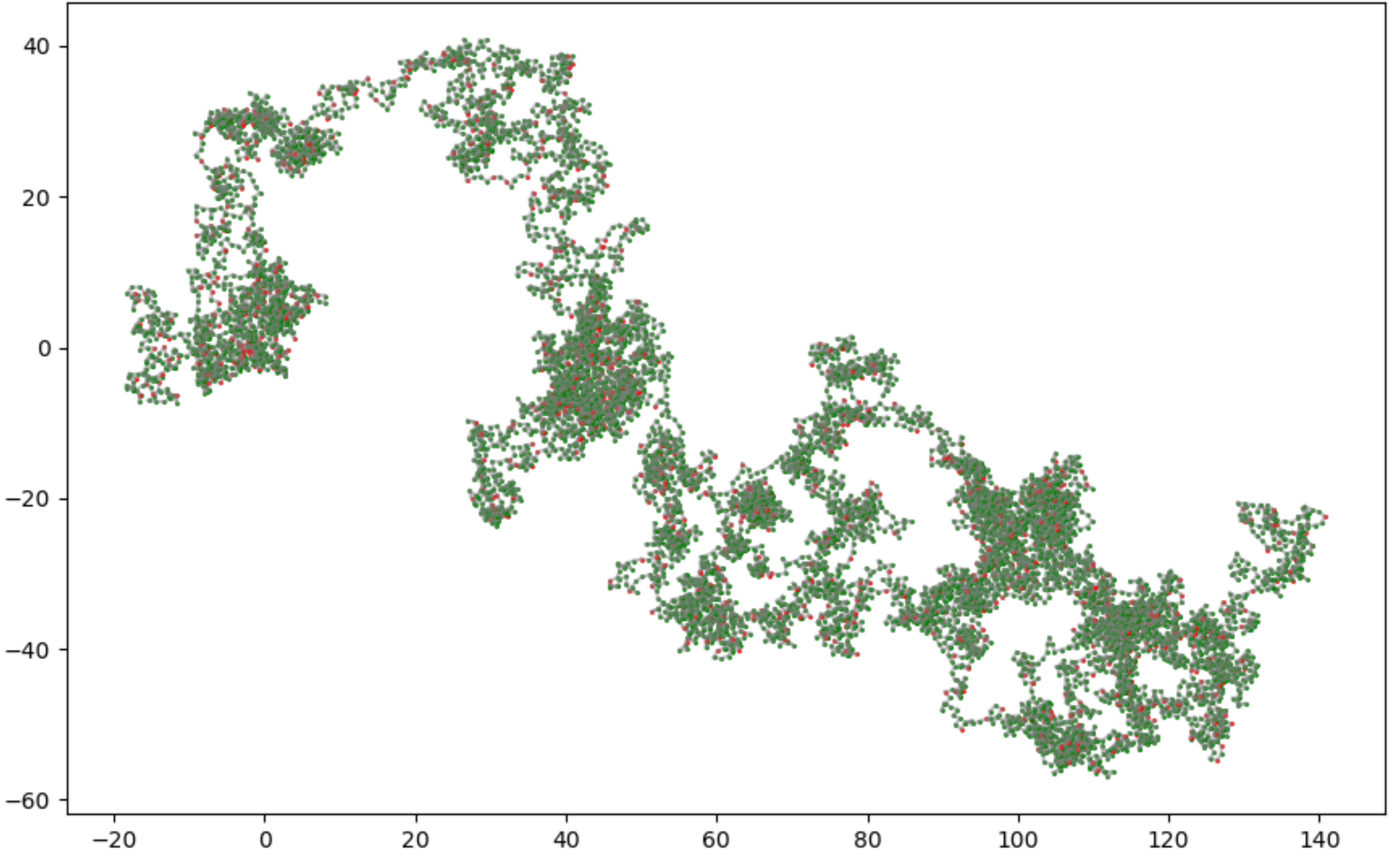


60
40
20
0
−20
−50
−40
−30
−20
−10
0
10
20

```
import math
from math import pi
from matplotlib import *
import matplotlib.pyplot as plt
from mpmath import *
from random import *

def prime(atester):
  pastrouve = True ; k = 2 ;
  if (atester in [0,1]): return False ;
  if (atester in [2,3,5,7]): return True ;
  while (pastrouve):
    if ((k * k) > atester): return True
    else:
      if ((atester % k) == 0): return False
      else: k=k+1

fig = plt.figure()
ax = fig.gca()
ax.set_aspect('equal')

n = 10001
somme = 0.0
for k in range(1,n+1):
  t = exp(2*j*math.pi*randint(1,k)*math.sqrt(2))
  somme = somme+t
  if True:
    c = 'r' if prime(k) else 'g'
    plt.plot(somme.real, somme.imag, color=c, marker='o', markersize=1)
  if (k != 1):
    ax.plot([xprec,somme.real],[yprec,somme.imag],'gray', alpha=0.5)
  xprec = somme.real
  yprec = somme.imag

xmin, xmax, ymin, ymax = ax.axis()
print(xmin, xmax, ymin, ymax)
#ax.set_xlim(-60, 60) ;
#ax.set_ylim(-140, 20)
plt.show()
```


40
20
0
−20
−40
−60
−20
0
20
40
60
80
100
120
140

```
import math
from math import pi
from matplotlib import *
import matplotlib.pyplot as plt
from mpmath import *

def prime(atester):
  pastrouve = True ; k = 2 ;
  if (atester in [0,1]): return False ;
  if (atester in [2,3,5,7]): return True ;
  while (pastrouve):
    if ((k * k) > atester): return True
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      if ((atester % k) == 0): return False
      else: k=k+1

fig = plt.figure()
ax = fig.gca()
ax.set_aspect('equal')

n = 10001
somme = 0.0
xprec, yprec = 0,0
for k in range(1,n+1):
  if (prime(k)):
    t = exp(2*j*math.pi*k*math.sqrt(2))
    somme = somme+t
    if True:
      c = 'r' if prime(k) else 'g'
      plt.plot(somme.real, somme.imag, color=c, marker='o', markersize=1)
    if (k != 1):
      ax.plot([xprec,somme.real],[yprec,somme.imag],'gray', alpha=0.5)
    xprec = somme.real
    yprec = somme.imag

xmin, xmax, ymin, ymax = ax.axis()
print(xmin, xmax, ymin, ymax)
#ax.set_xlim(-50, 40) ;
#ax.set_ylim(-10, 80)
plt.show()
```

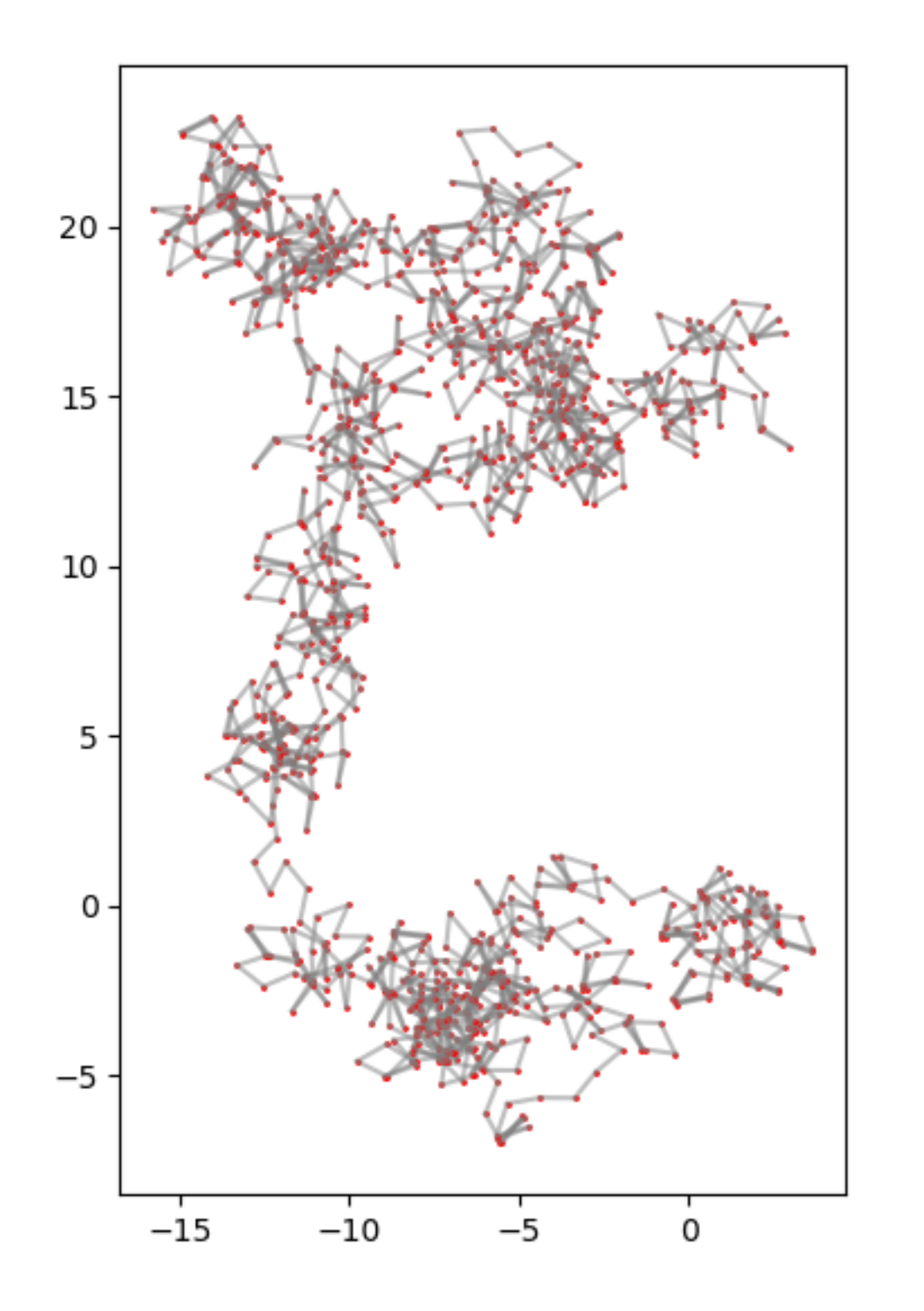
20
15
10
5
0
−5
−15
−10
−5
0