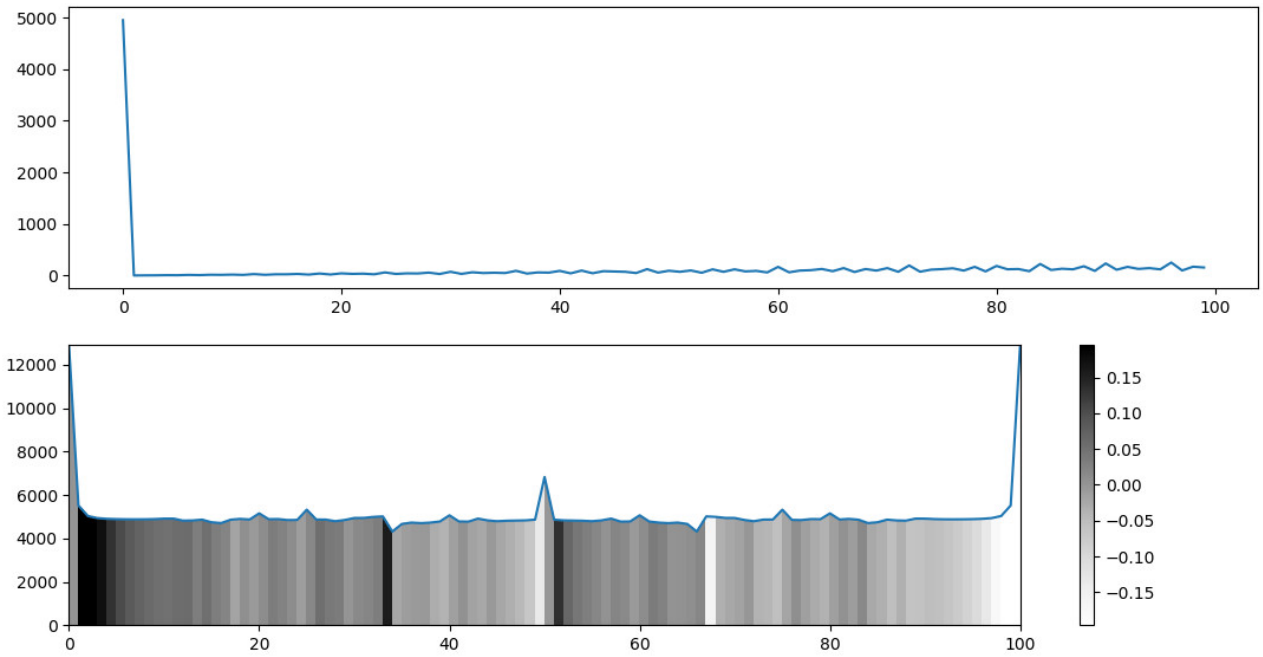
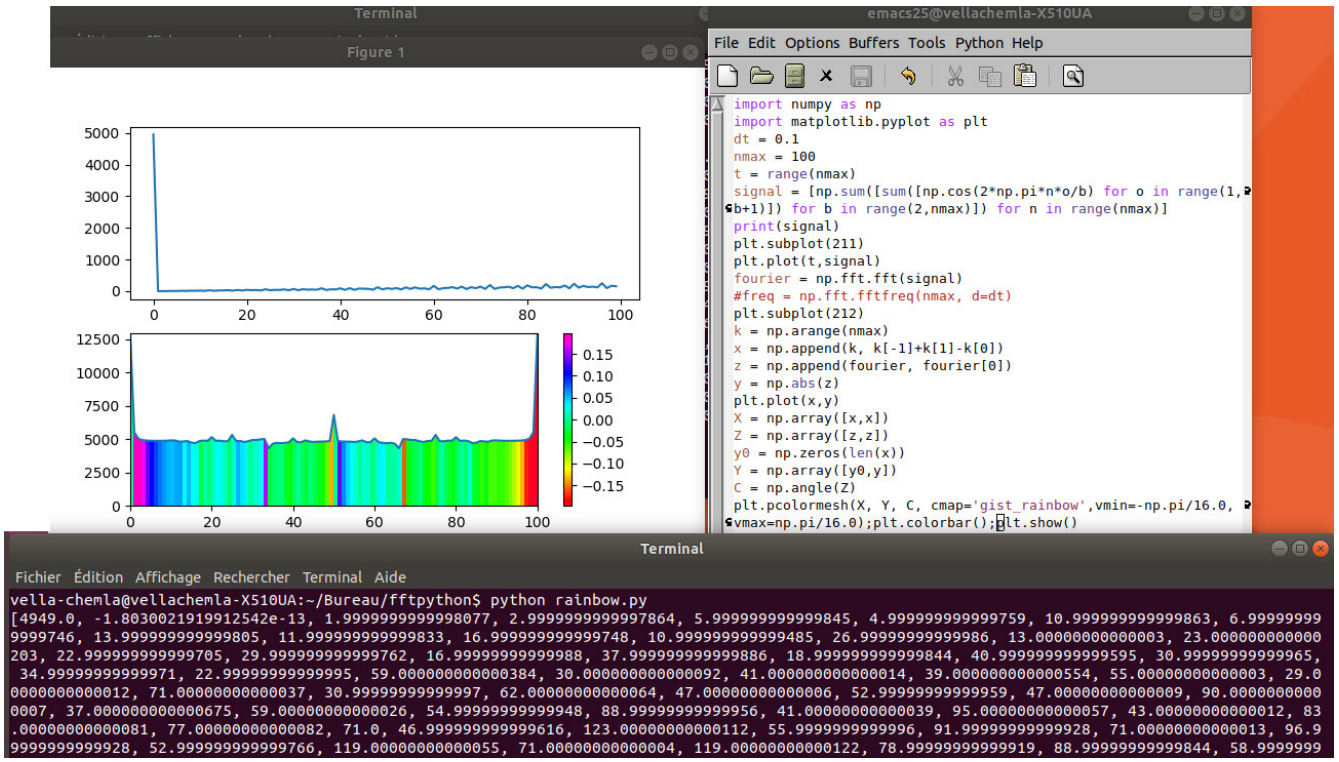
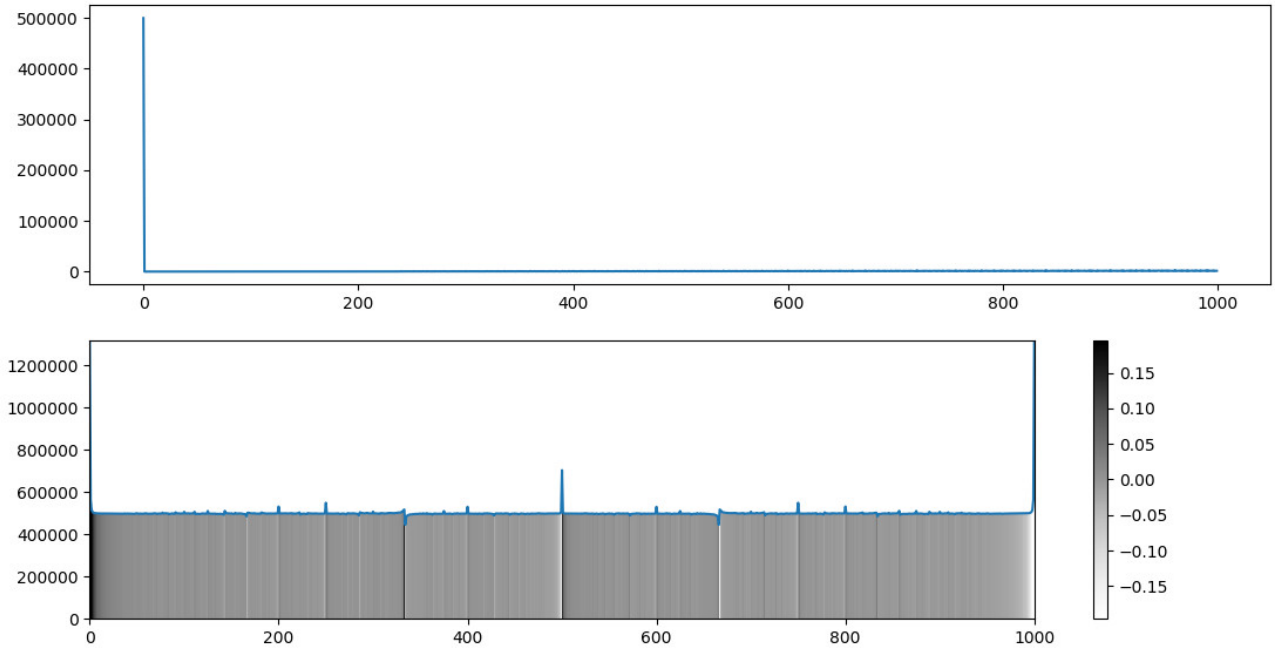
Spectres de la somme de somme de cosinus (Denise Vella-Chemla, 4.3.2019)



Couleurs arc-en-ciel

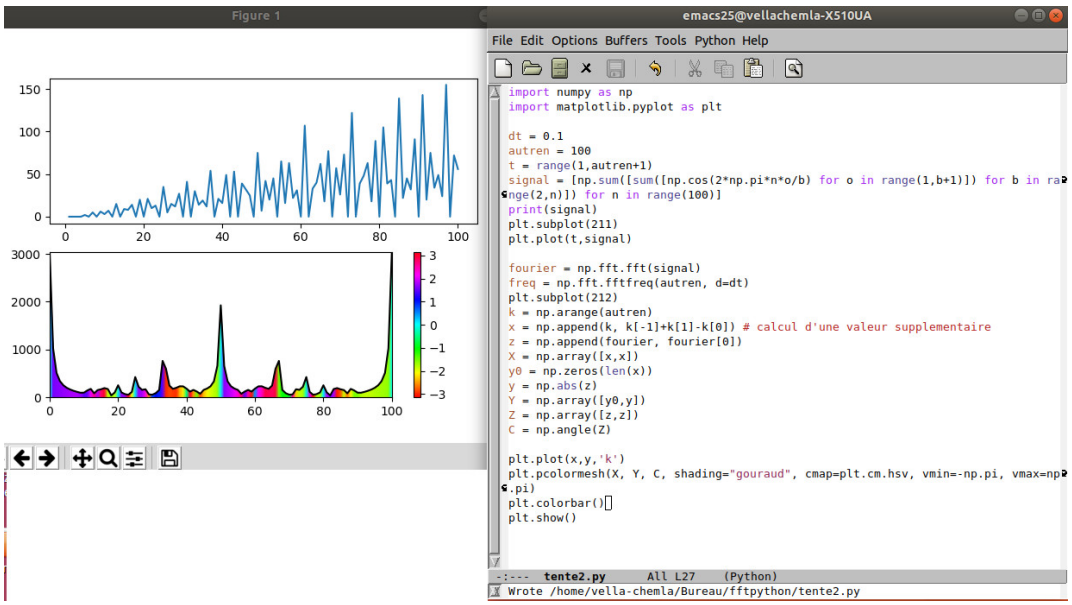


Idem jusqu'à 1000



On distingue très bien des raies noires en 501, 601, 801, 250, 333 et leur "correspondante", soit juste à côté, soit sur la moitié opposée du spectre.

Premières tentatives jusqu'à 100



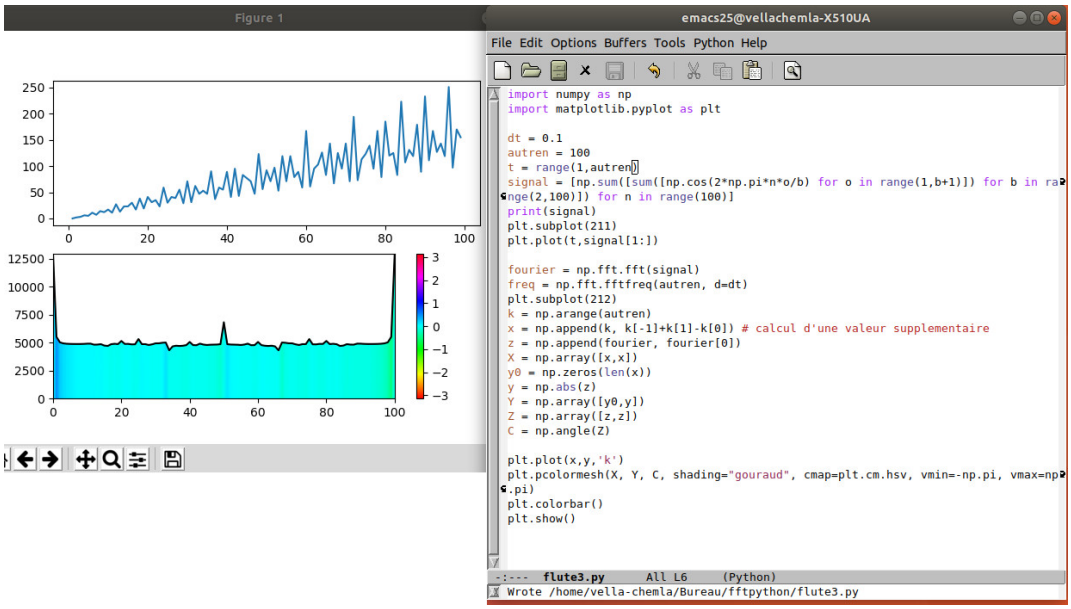


Figure 1
emacs25@vellachemla-X510UA
File Edit Options Buffers Tools Python Help
import numpy as np
import matplotlib.pyplot as plt
dt = 0.1
autren = 100
t = range(1,autren)
signal = [np.sum([sum([np.cos(2*np.pi*n*o/b) for o in range(1,b+1)]) for b in range(2,100)]) for n in range(100)]
print(signal)
plt.subplot(211)
plt.plot(t,signal[1:])
fourier = np.fft.fft(signal)
freq = np.fft.fftfreq(autren, d=dt)
plt.subplot(212)
k = np.arange(autren)
x = np.append(k, k[-1]+k[1]-k[0]) # calcul d'une valeur supplementaire
z = np.append(fourier, fourier[0])
X = np.array([x,x])
y0 = np.zeros(len(x))
y = np.abs(z)
Y = np.array([y0,y])
Z = np.array([z,z])
C = np.angle(Z)
plt.plot(x,y,'k')
plt.pcolormesh(X, Y, C, shading="gouraud", cmap=plt.cm.hsv, vmin=-np.pi, vmax=np.pi)
plt.colorbar()
plt.show()
-:--- flute3.py All L6 (Python)
Wrote /home/vella-chemla/Bureau/fftpython/flute3.py

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jusqu'à 300

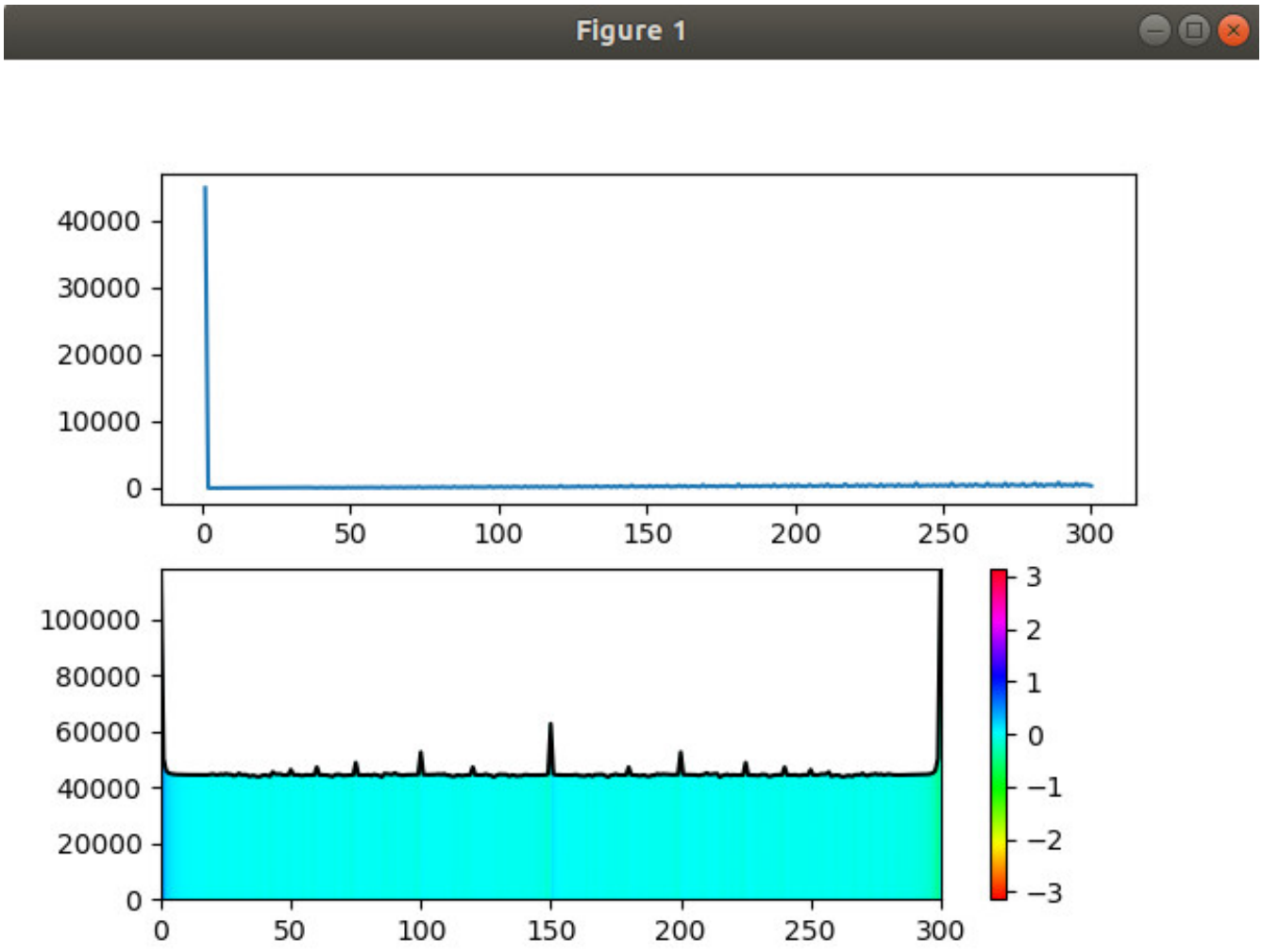
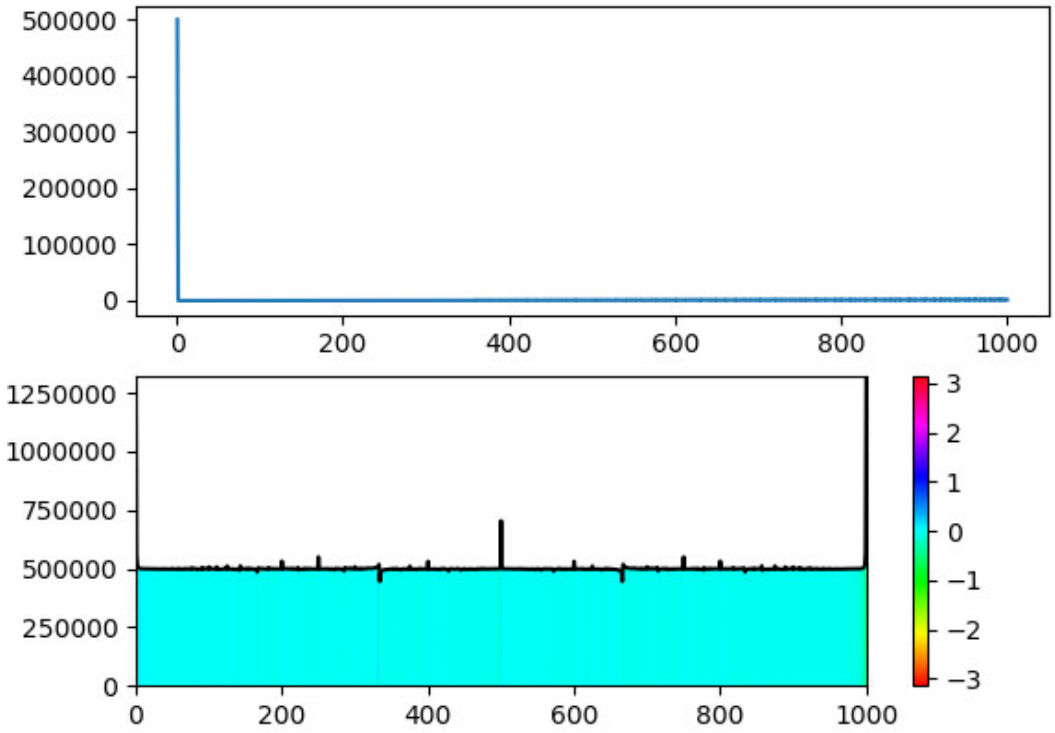


Figure 1
40000
30000
20000
10000
0
0
50
100
150
200
250
300
100000
80000
60000
40000
20000
0
3
2
1
0
−1
−2
−3

jusqu'à 1000



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spectre en fréquences