Traitement

December 8, 2022

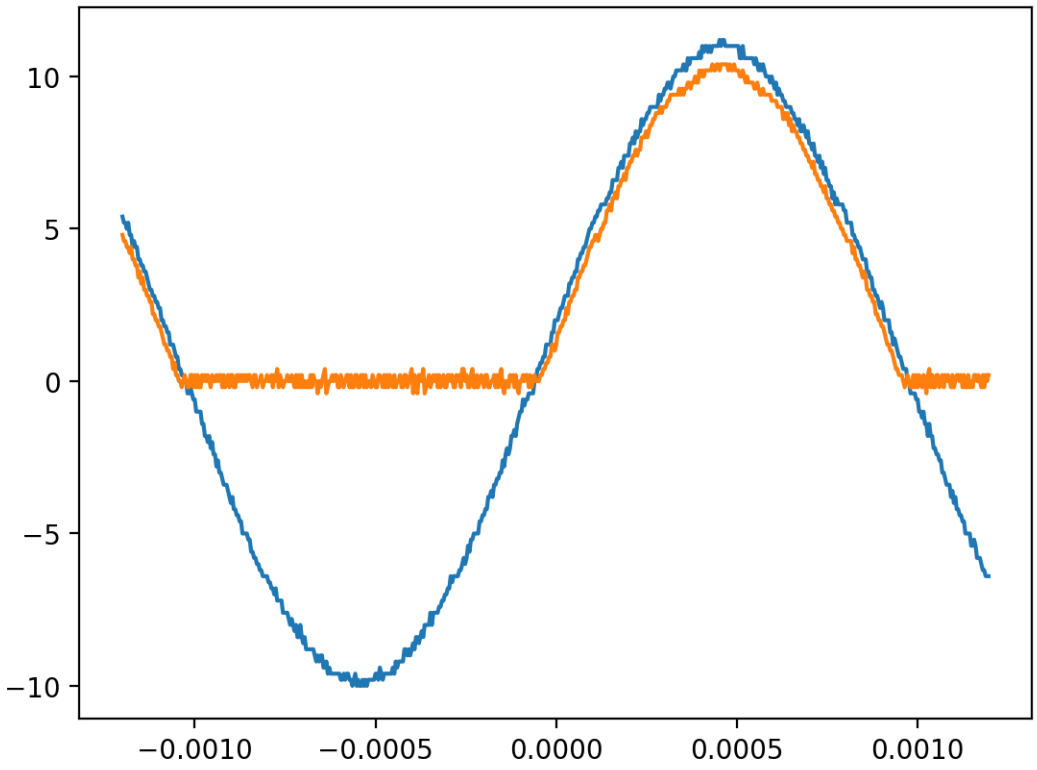
1 TP4 - Annexe 1 : Traitement numérique des données

[25]:
```
import numpy as np
import matplotlib.pyplot as plt
plt.rcParams['figure.dpi'] = 200
```

1.1 Redressement Ohmique

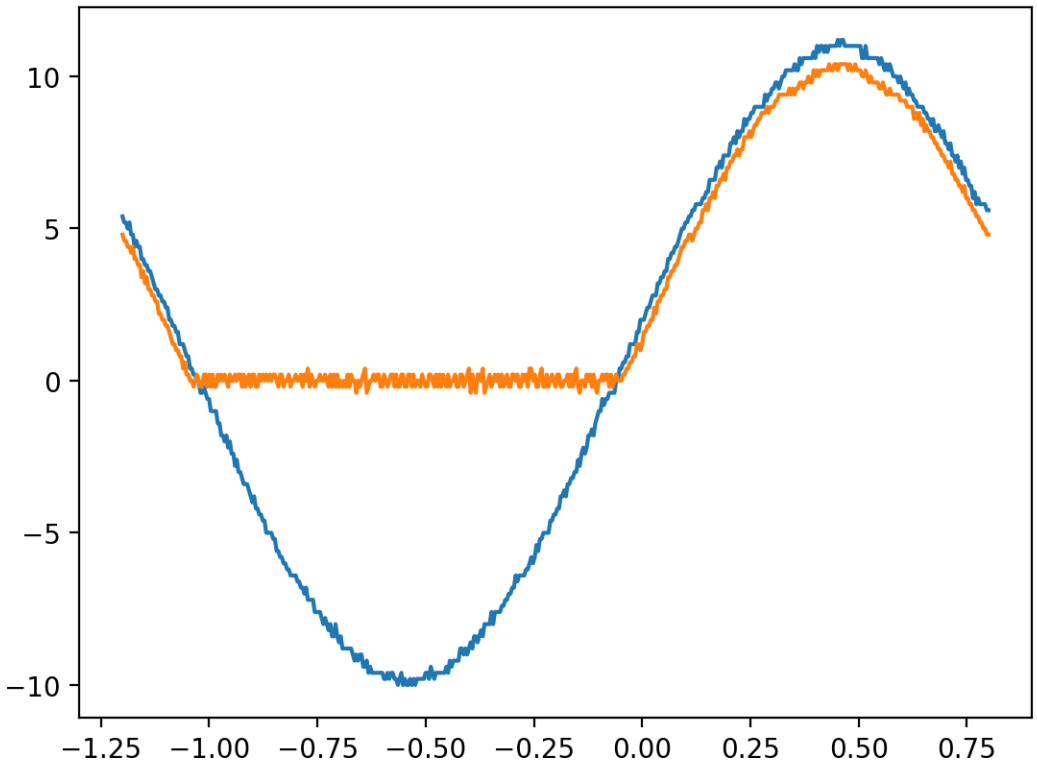
[26]:
```
t, u, v = np.loadtxt("./redress_ohmique.csv", dtype=float, delimiter=',',␣
↪skiprows=2, unpack=True)
```

[27]:
```
#données extraites

plt.plot(t, u)
plt.plot(t, v)

plt.show()
```



[28]:
```
def rase_periode(s):
    T = []
    compteur = 0

    for i in range(1, len(s), 5):
        if (s[i-5] - s[0]) * (s[i] - s[0]) <= 0:
            compteur += 1
            T.append(i)

    if compteur%2 == 1 :
        return T[-2]
    else :
        return T[-1]



T = rase_periode(u)

newt = [s*1000 for s in t]

plt.plot(newt[:T], u[:T])
plt.plot(newt[:T], v[:T])
```

```
plt.show()
```



[29]:
```
def val_eff(s):
    #valeur efficace
    s = s[:rase_periode(s)]

    return np.sqrt(np.mean( s**2))


def val_eff_ctrd(s):
    #valeur efficace centrée
    s = s[:rase_periode(s)]

    return np.sqrt( np.mean( s**2 ) - np.mean(s)**2 )


def moy(s):
    return np.mean(s[:rase_periode(s)])


def print_info(s):
    print(f"\t-Valeur moyenne : {moy(s)}")
```

```
    print(f"\t-Valeur efficace : {val_eff(s)}")
    print(f"\t-Valeur efficace centrée : {val_eff_ctrd(s)}")


print_info(v)
```

```
        -Valeur moyenne : 3.2550894750498998
        -Valeur efficace : 5.10121115633115
        -Valeur efficace centrée : 3.9276898771283815
```

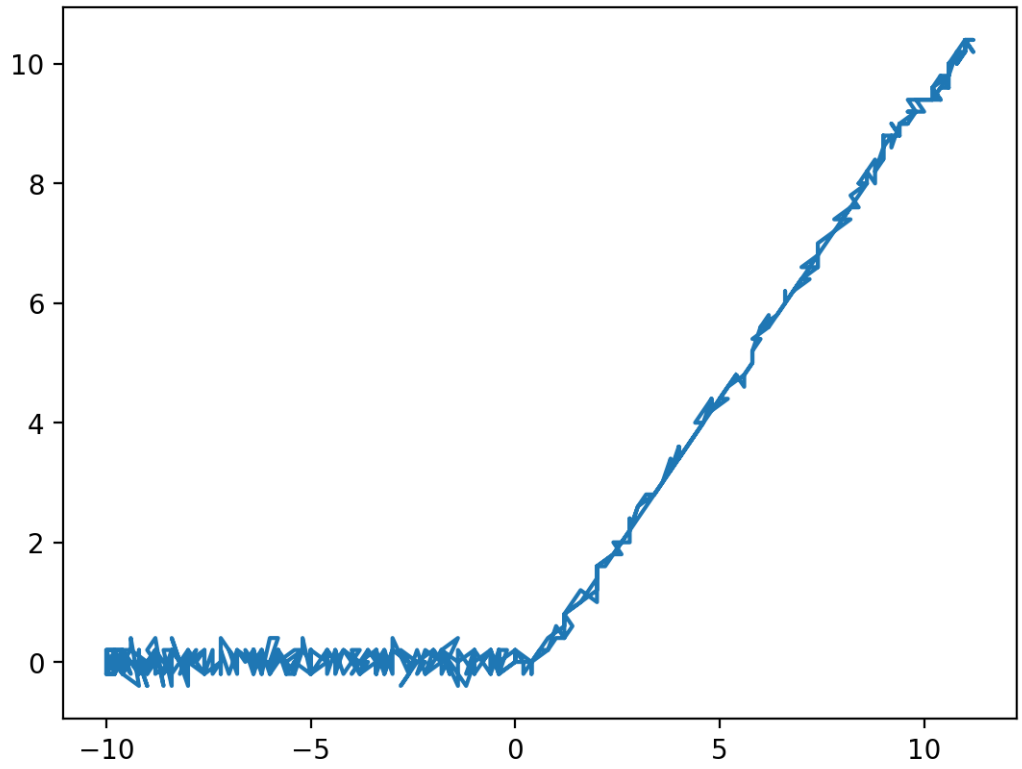
[31]:
```
def ondulation(s):
    m = moy(s)
    return (val_eff(s - m))/m

ondulation(v)
```

[31]:
```
1.2066303882685654
```

1.2 Affichage de la caractéristique de la diode

[33]:
```
plt.plot(u, v)
```

[33]:
```
[<matplotlib.lines.Line2D at 0x21a092ce5c0>]
```



1.3 Redressement double alternance

[21]:
```
t, s1, s2 = np.loadtxt("./4marche.csv", dtype=float, delimiter=',', skiprows=2,␣
↪unpack=True)


plt.plot(t, s1)
plt.plot(t, s2)
#plt.plot(t, s)
plt.legend(["s1", "s2", "s"])
```

[21]:
```
<matplotlib.legend.Legend at 0x113b0ed70>
```