

How to show the power spectrum for a given wav using python

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Spectrogram

```
from __future__ import print_function, division

%matplotlib inline

import thinkdsp
import thinkplot
import numpy as np

import warnings
warnings.filterwarnings('ignore')

from ipywidgets import interact, interactive, fixed
import ipywidgets as widgets

def plot_spectrogram(wave, seg_length):
    spectrogram = wave.make_spectrogram(seg_length)
    print('Time resolution (s)', spectrogram.time_res)
    print('Frequency resolution (Hz)', spectrogram.freq_res)
    spectrogram.plot(high=700)
    thinkplot.config(xlabel='Time(s)', ylabel='Frequency (Hz)')
```

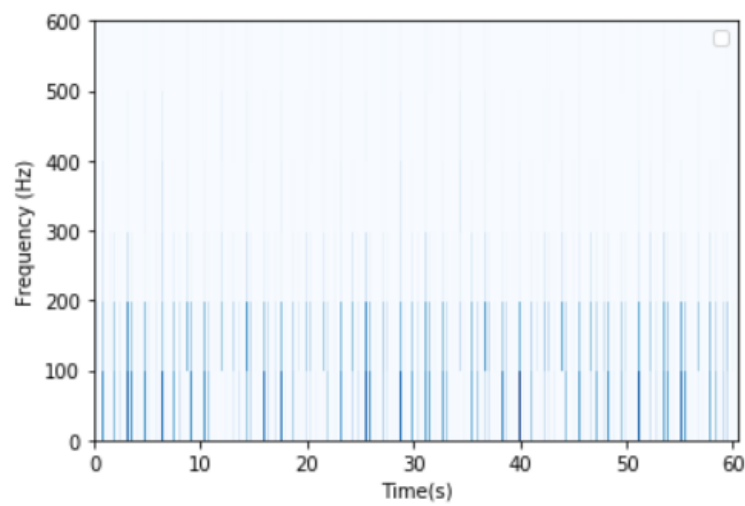
```
import thinkdsp

strHeartSound = 'Normal_Split_S1_8k_0109'
strSaveLocation = '/home/jing/'
waveMajorSignal = thinkdsp.read_wave('/home/jing/' + strHeartSound + '.wav')
```

```
waveMajorSignal.make_audio()
```

```
plot_spectrogram(waveMajorSignal, 80)
```

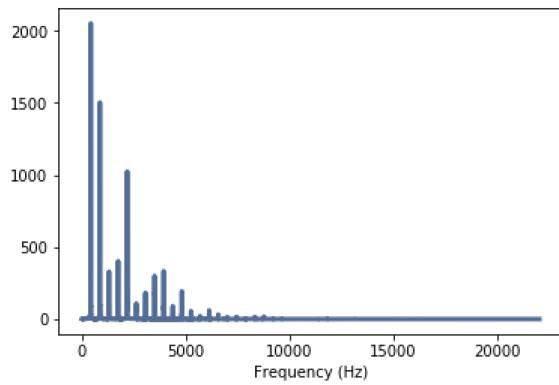
E.g.



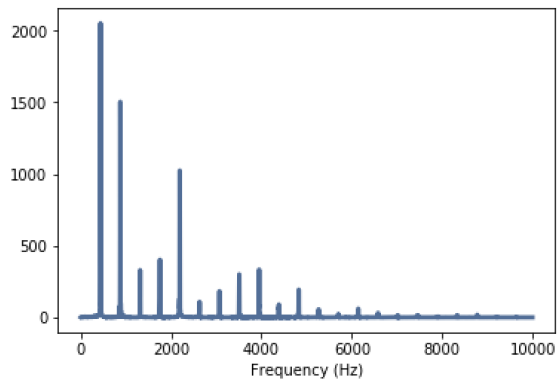
Frequency Response

Wave to Spectrum

```
# Wave provides make_spectrum, which computes the spectrum of the wave.  
spectrum = segment.make_spectrum()  
spectrum.plot()  
thinkplot.config(xlabel='Frequency (Hz)')
```

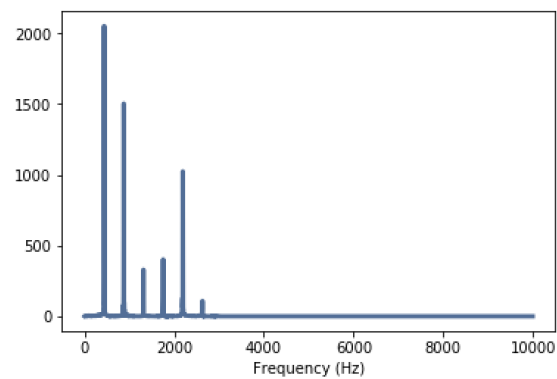


```
spectrum.plot(high = 10000)
```



Low Pass

```
spectrum.low_pass(3000)  
spectrum.plot(high = 10000)  
thinkplot.config(xlabel='Frequency (Hz)')
```



Reference

- <https://github.com/AllenDowney/ThinkDSP/blob/master/code/chap01.ipynb>