Lab6

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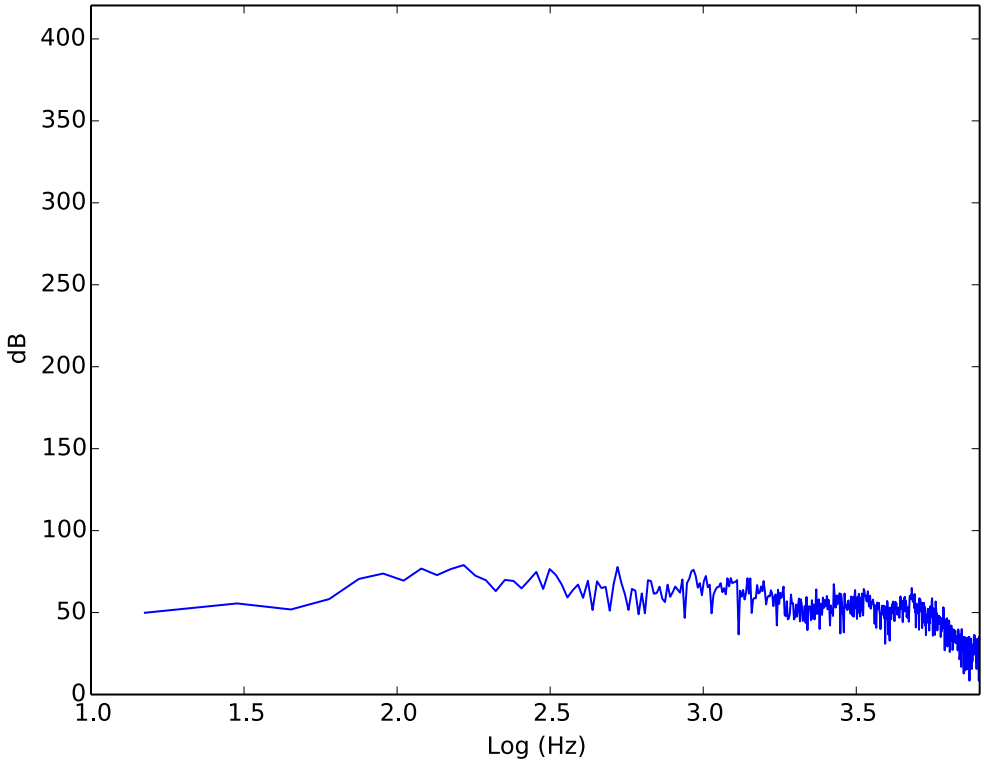
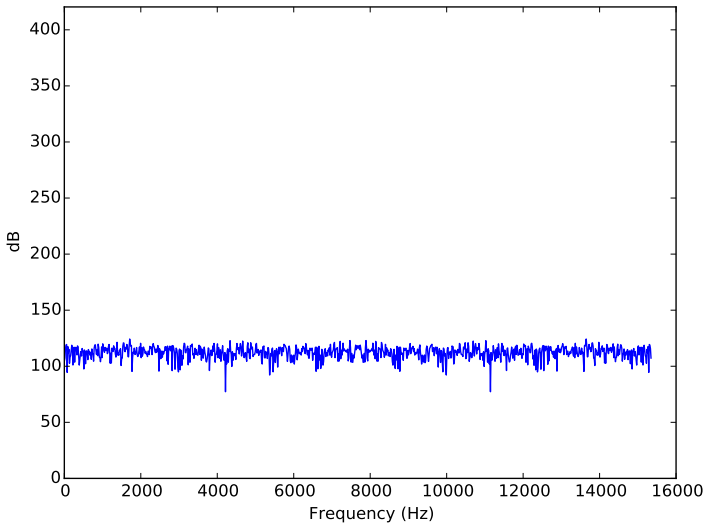
1.See the file Lab5_Sec1_kwc305.py

In this file, I modify the scale for both x and y, I use numpy to transform to dB scale.
And for the PDF export, I use
from matplotlib.backends.backend_pdf import PdfPages
as my library, and do the export for the waveform.



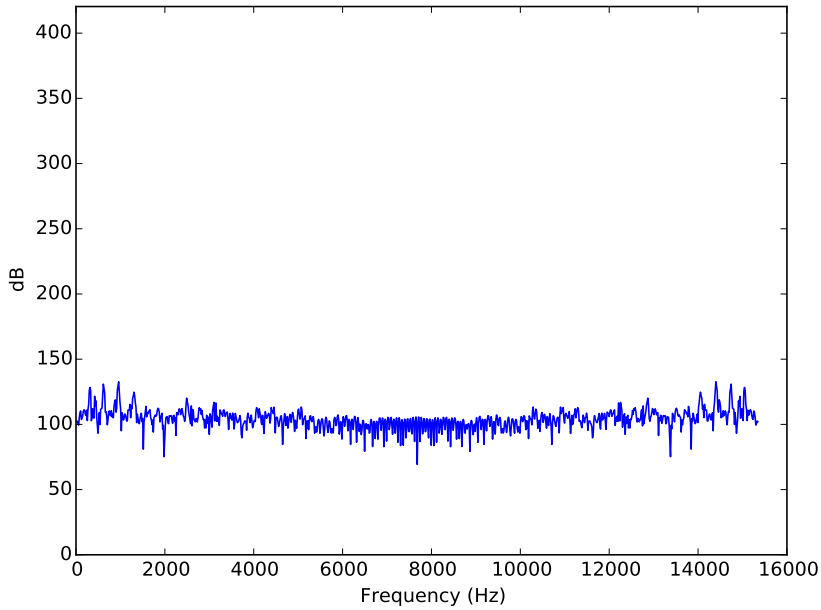
2. See the file Lab5_Sec2_kwc305.py

In this file, I do the same differential equation. I take the 7th order coefficient number and do the calculation. And let microphone as input and output the final waveform for the input.

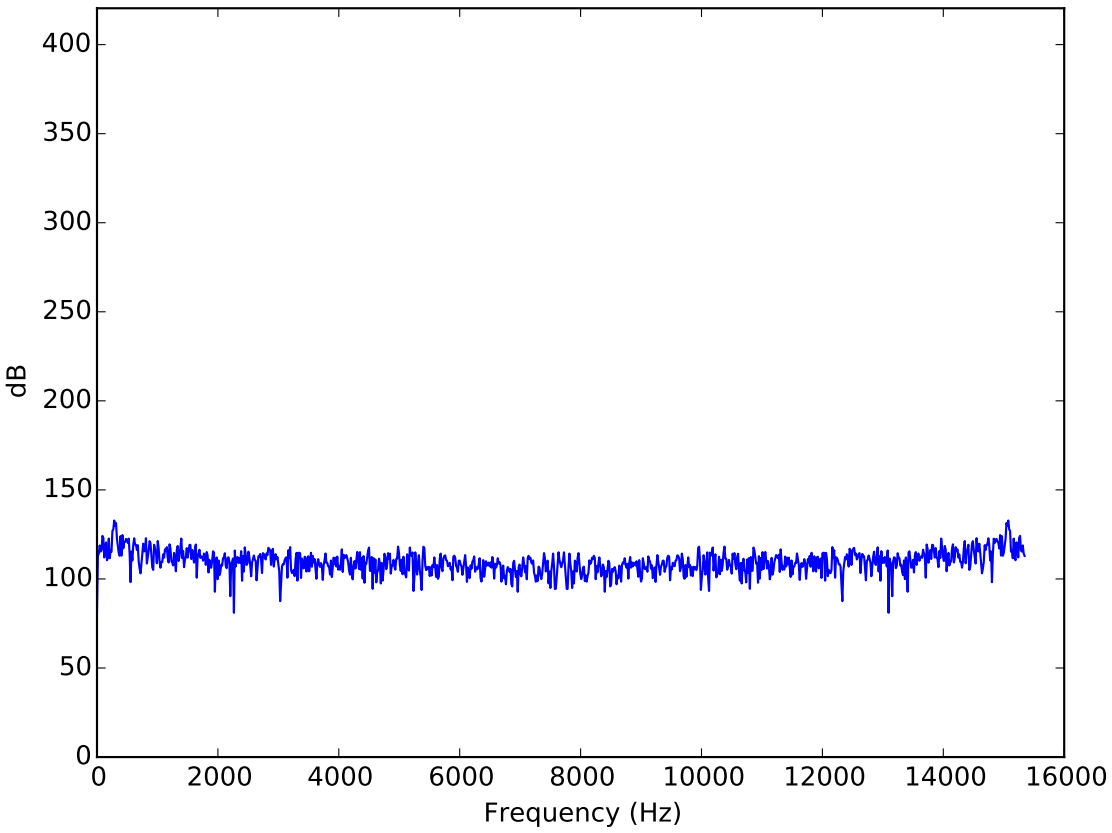


3. See the file Lab5_Sec3_kwc305.py
In this file, I set a threshold to 120dB, and use while loop to record the sound. When the signal over the threshold, the recording will stop and output the FFT waveform to both PDF and wave file.

In the first case, I record in my bedroom, and the result is following:



And in the second case, I record in the bathroom, which is smaller then my bedroom and the echo is stronger, and the result is as following:



Although those two results are pretty similar, but still can see there's slightly stronger response in the bathroom, which the size is smaller, which means echo are more powerful than the response in the bedroom.