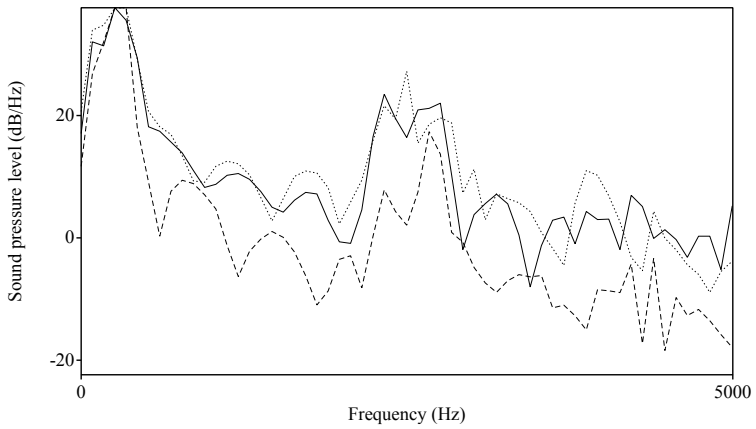
Assignment 2
Resonance and Spectrograms

1. Record yourself saying the words: “heat”, “hoot”, “hot”, “hate”, and “hut.” For each word, measure F1 and F2 at the midpoint. Report your values for each word on the document you turn in, but *also* fill out your values on this spreadsheet: https://docs.google.com/spreadsheets/d/1gskKUC_my9fGkBOWER7PYBLYAuh76Rc_-5RnWaBepvM/edit?usp=sharing

Be sure to take your formant measurements from a steady state portion of the vowel, preferably from the center of the steady state.

2. Download the dit.wav, dut.wav, and dat.wav from the Lecture/Lab 12 notes used in our lab. (They are at the bottom of the page). For each sound file print three spectral slices (one on top of each other in the print window) from a wideband spectrogram. Print spectra (0 to 5000Hz only) taken from the beginning of the vowel, the middle of the vowel, and the end of the vowel.

When you print to the print window, specify the range (0-5000Hz). For the first spectrum make sure the “garnish” box is checked. For the next spectrum (from the middle of the vowel), change the “pen” in the Print window to “dotted” then print with the garnish box unchecked. For the last spectrum (end of the vowel), change the pen to “dashed” and again print with the garnish box unchecked. The final picture for each sound file should look like this:



3. Download the sound file hide_heidi_heidel.wav (at the bottom of Lec 12). All three words in the file contain the diphthong, [ai]. Diphthongs are characterized by a change in F2 over the course of the vowel.

A. Measure the duration of the first vowel in the three words and report them. **What observation can you make about the duration of [ai] in the three words?**

B. Calculate the rate of F2 change in the vowels and report them. [Remember, the rate of change is the “slope” of F2 based on the beginning and end points of F2 and the duration of the vowel] Hint: For “hide” F2 begins with a brief steady state, then increases. Take the onset of the diphthong at the “elbow” or the point where F2 starts to increase and not the steady state.