

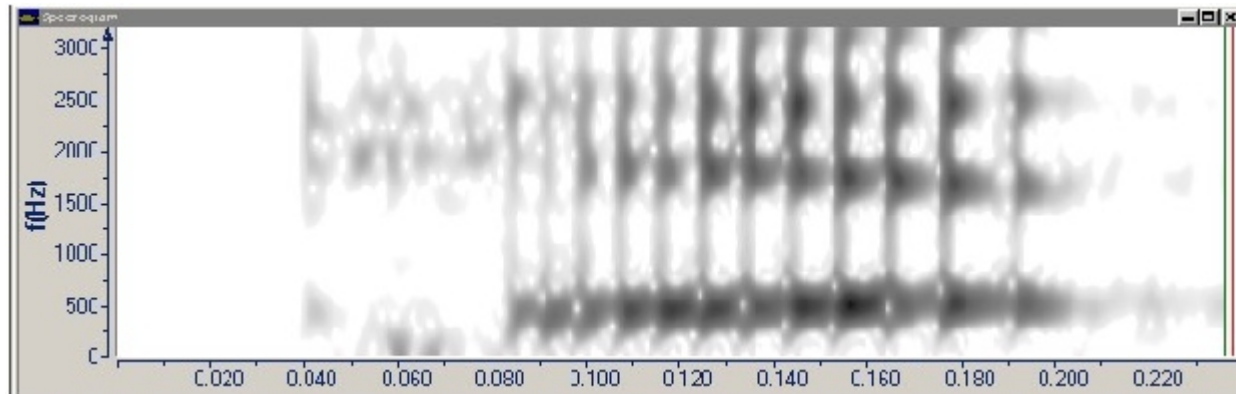
Ant/Lin 322/522 Problem Set 4: Part 1

Below is a spectrogram of [p<sup>h</sup>It] 'pit'. Answer the questions that follow it.

Notes:

The frequency scale is on the vertical axis, measured in Herz: cycles/second.

The time scale is on the horizontal axis, measured in thousandths of a second, milliseconds; for example, .020 seconds is read as 20 milliseconds..



1. With a vertical line that runs from the bottom to the top of the spectrum, indicate where the **release** of the initial voiceless bilabial stop occurs. Label it P.
2. With a similar vertical bar indicate where the aspiration **ends**? Label it H.
3. What is the **duration** of the aspiration in milliseconds?
4. At what time on the horizontal scale does the vowel **begin**?
5. Indicate with an arrow the last vocal cord pulse of the vowel. Label it V.
6. Compute the **fundamental frequency** of the speakers voice: count the number of vocal cord pulses in 100 milliseconds (0.100 of a second) and multiply by 10 to get the value in Hz: the number of cycles per second.
7. With arrows labeled F1, F2, and F3, point to the three **formants** of the vowel.
8. What does the fact that the time between the pulses of the vocal cords (the clear vertical bars) is **growing larger** during the pronunciation of the vowel indicate?