

1 SSP2012 / Assignment 1: Getting familiar (again) with Praat

Download Praat from Praat's web site. Read the Praat Intro, available in the Help menu.

1. Create a mono sound signal (pure tone) with an amplitude of 0.45, a frequency of 1000 Hz and starting phase of 0. Make its duration 0.05 seconds and its sampling frequency 22050 Hz.
2. Like (1), however, the starting phase is now $\pi/2$. Use the SoundEditor to view the two sounds.
3. Although both sounds have the same frequency, they do not exactly sound the same (listen carefully with a headphone). Explain.
4. Draw the spectrum of sound (1). In making the spectrum, uncheck the Fast option.
5. Create a sound signal which is the *sum* of the three frequencies 200, 400, and 600 Hz. The amplitudes of the three components are 4, 2, and 1, respectively. Listen to this signal.
6. Scale a copy of this signal such that its maximum amplitude will be 0.99. You can use the `Modify>Scale peak...` command. Draw all sounds in a grid in the left column, i.e. the 200, 400, 600 component and the sum above each other. In the right column display the spectrum where the frequency range is from 0 to 1000 Hz.

An example script for drawing in a grid could be:

```
nx = 2
ny = 5
wx = 6
dx = wx / nx
wy = 10
dy = wy / ny
Erase all
Font size ... 10
for irow to ny
  for icol to nx
    vpx1 = (icol - 1) * dx
    vpx2 = vpx1 + dx
    vpy1 = (irow - 1) * dy
    vpy2 = vpy1 + dy
    Select outer viewport ... vpx1 vpx2 vpy1 vpy2
    < do some drawing ... >
  endfor
endfor
Select outer viewport ... 0 vpx2 0 vpy2
```

7. Draw a time slice of 0.03s of this signal.
8. Measure the amplitudes of the individual peaks in the spectrum with the SpectrumEditor. How do the dB values of the amplitude relate to the 4-2-1 relation above?