

## Waveforms of dyads with harmonic spectra, spanning 0 to 1200 cents

The fundamental frequency of each dyad's lower tone is 150 Hz (i.e., ca. D3, middle line of the bass-clef staff).

The fundamental frequencies of the dyads' upper tones range from 1200 to 0 cents above 150 Hz (i.e., from 300 Hz to 150 Hz), in increments of 25 cents.

The duration of each dyad and its component tones is 3 seconds.

The spectrum of each tone comprises 5 sine tones.

Each of the 5 sine tones was generated on a separate track by means of Audacity freeware and having the following relative amplitudes (Generate/Tone...; Tracks/Add New):

- 1<sup>st</sup> partial (e.g., 150 Hz): 0.4 (-8 dB)
- 2<sup>nd</sup> partial (e.g., 300 Hz): 0.2 (-14 dB)
- 3<sup>rd</sup> partial (e.g., 450 Hz): 0.1 (-20 dB)
- 4<sup>th</sup> partial (e.g., 600 Hz): 0.05 (-26 dB)
- 5<sup>th</sup> partial (e.g., 750 Hz): 0.025 (-32 dB)

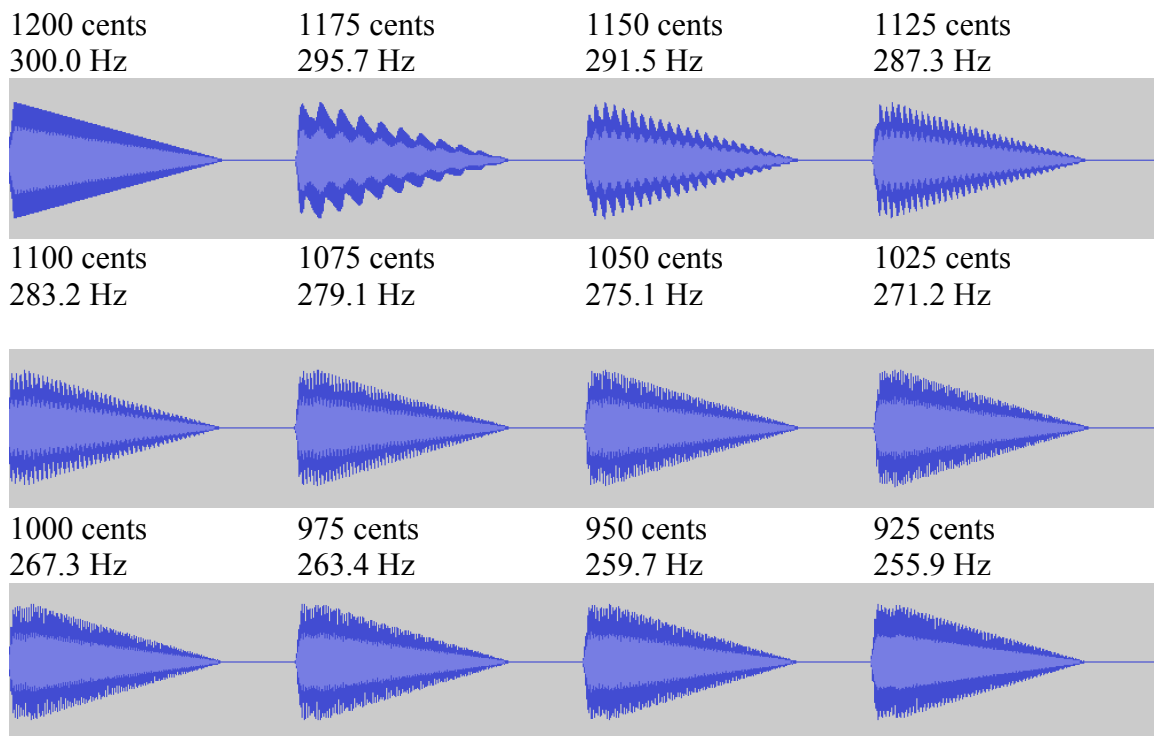
The 5 tracks were combined into a single track (Tracks/Mix and Render), resulting in an amplitude of -5.2 dB, which was decreased to -12 dB by changing the tone's amplitude by -6.8 dB (Effect/Amplify).

The amplitude of the first 100 milliseconds was faded in (Effect/Fade In) and the remaining 2.9 milliseconds were faded out (Effect/Fade Out).

The following images convey the changes in each dyad's amplitude from the beginning to the end of its 3-second duration, with a 1-second silence between successive dyads.

A recording of all 49 dyads in the following order, i.e., from 1200 cents to 0 cents) is accessible online as a .wav file at

<http://yorkspace.library.yorku.ca/xmlui/handle/10315/32806>.

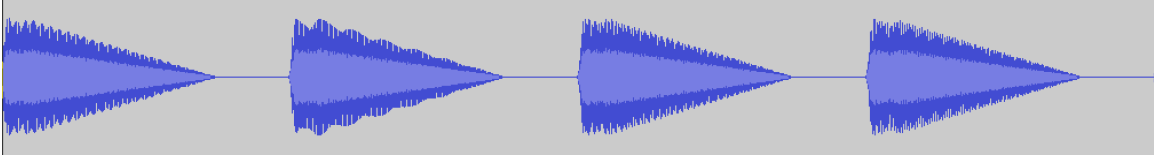


900 cents  
252.3 Hz

875 cents  
248.7 Hz

850 cents  
245.1 Hz

825 cents  
241.6 Hz

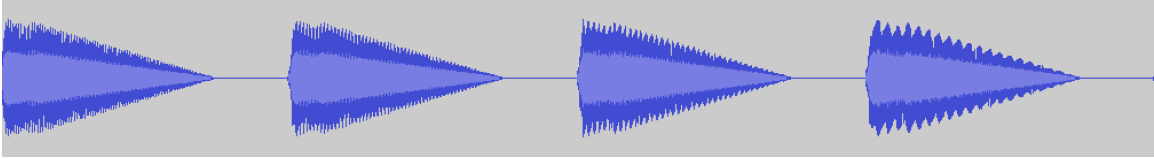


800 cents  
238.1 Hz

775 cents  
234.7 Hz

750 cents  
231.3 Hz

725 cents  
228.0 Hz

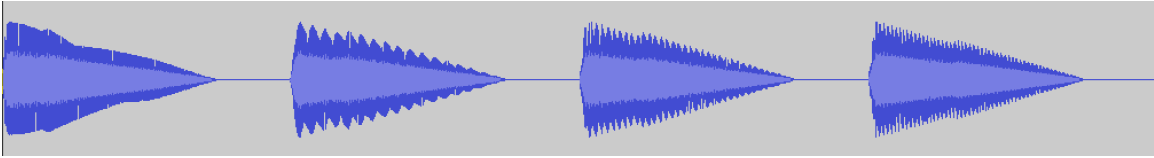


700 cents  
224.7 Hz

675 cents  
221.5 Hz

650 cents  
218.3 Hz

625 cents  
215.2 Hz

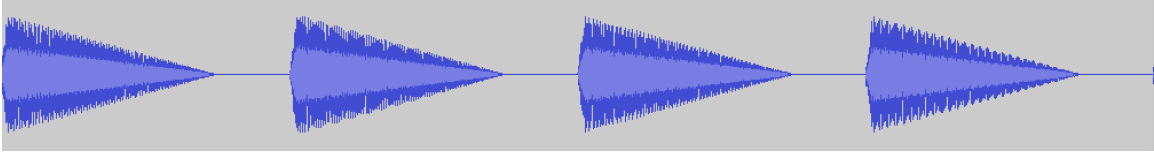


600 cents  
212.1 Hz

575 cents  
209.1 Hz

550 cents  
206.1 Hz

525 cents  
203.1 Hz

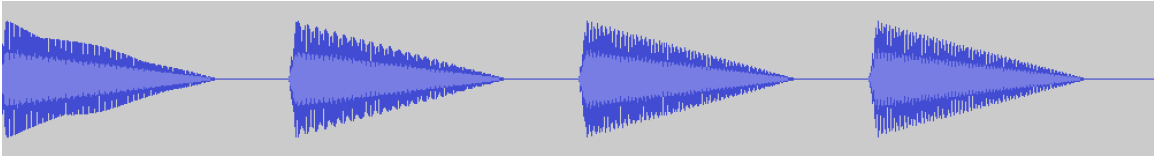


500 cents  
200.2 Hz

475 cents  
197.4 Hz

450 cents  
194.5 Hz

425 cents  
191.7 Hz

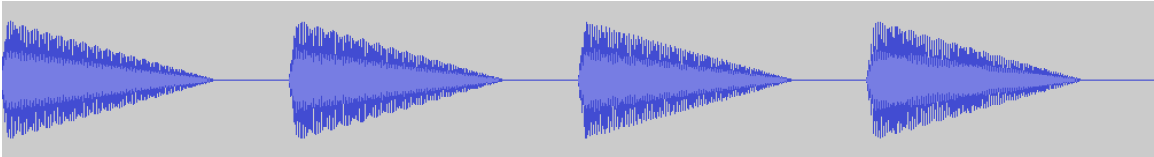


400 cents  
189.0 Hz

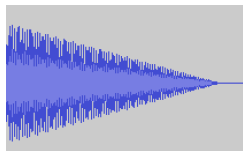
375 cents  
186.3 Hz

350 cents  
183.6 Hz

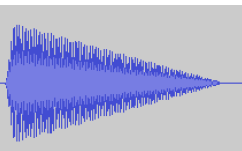
325 cents  
181.0 Hz



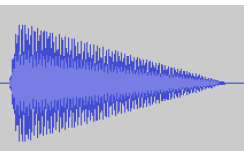
300 cents  
178.4 Hz



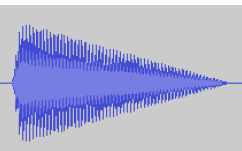
275 cents  
175.8 Hz



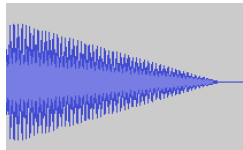
250 cents  
173.3 Hz



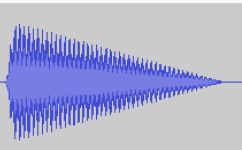
225 cents  
170.8 Hz



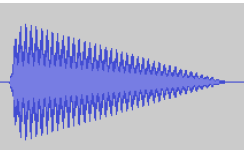
200 cents  
168.4 Hz



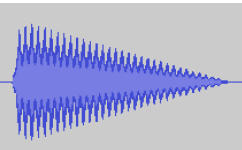
175 cents  
166.0 Hz



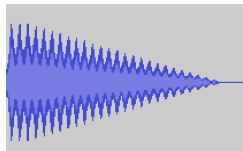
150 cents  
163.6 Hz



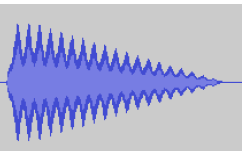
125 cents  
161.2 Hz



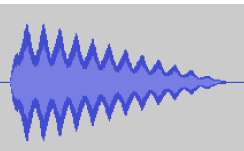
100 cents  
158.9 Hz



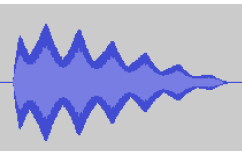
75 cents  
156.6 Hz



50 cents  
154.4 Hz



25 cents  
152.2 Hz



0 cents  
150.0 Hz

