Blatt 03 - Amplitude (2)

Kreatives Programmieren 1

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Contents

1 Literatur

- Miller Pucket: The Theory and Technique of Electronic Music

- Richard Boulanger [Editor]: The Csound Book

- Charles Dodge, Thomas A. Jerse: Computer Music

2 Pitch / Tonhöhe

- Pitch is our subjective response to frequency. It is the main sensation caused by the stimulation of nerve endings on the basilar membrane.

- The approximate range of audible frequencies is between 20 and 20,000 Hz. The frequencies from 200 to 2000 Hz comprise the region of greatest perceptual acuity and sensitivity to change of frequency.

2093.0044 Hz   65.40639 Hz
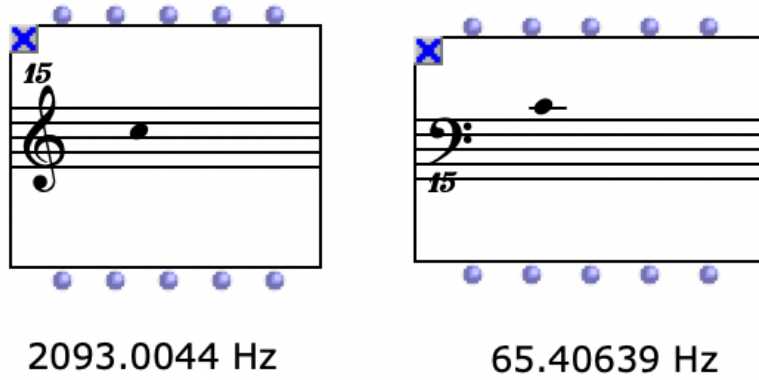
3   Frequeny vs Pitch | Frequenz vs Tonhöhe

65.40639 Hz   69.295655 Hz   2093.0044 Hz   2217.461 Hz
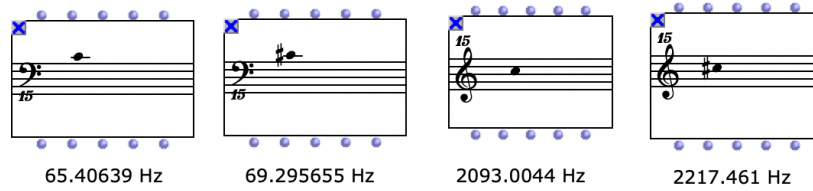
$F_C = 65.4 Hz \mid F_{Cis} = 69.29 Hz \mid Dif = 3.89$
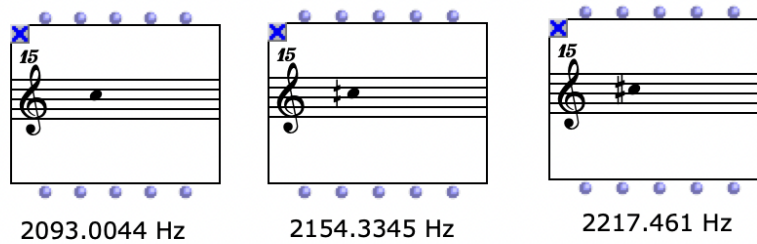$F_{c'''} = 2093 Hz \mid F_{cis'''} = 2217.461 Hzz \mid Dif = 124.45$

Observe that there is not a constant frequency diference between two adjacent tones; that is, to find the frequency of a tone, one cannot simply add a constant to the frequency of the previous tone.

$$2^{\frac{1}{12}}$$

$$F_{Cis} = F_C * 2^{\frac{1}{12}}$$

$$F_{cis''} = F_{c''} * 2^{\frac{1}{12}}$$

2

3.1 Quartertone | Viertelton

| 2093.0044 Hz | 2154.3345 Hz | 2217.461 Hz |

$$2^{\frac{1}{24}}$$

3.2 Freq->Midi | Midi->Freq
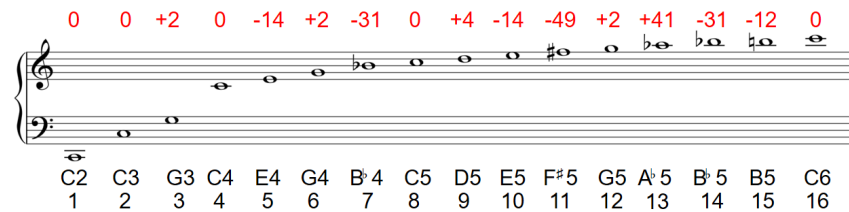
$$f_m = 440.2^{\frac{m-69}{12}}$$

$$m_f = 69 + 12.\log_2\frac{f}{440}$$

3.3 Cent-Einheit

$$c = 1200\log_2\frac{f2}{f1}$$

3.4 Harmonic Series


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mpv ~/arbeit/ICEM/2023_WiSe/musikinformatik/16Harm.aiff
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$$Fundamental*N = NthHarmonic \,|\, Grundfrequenz*N = NthOberton$$

N	Nth Harmonic
1	50
2	100
3	150
4	200
5	250
. . .	. . .

3.5 Sub-Harmonic Series

$Fundamental/N = NthSub-Harmonic \,|\, Grundfrequenz/N = NthOberton$

N	Nth Harmonic
1	500
2	250
3	125
4	62.5
5	31.25
. . .	. . .

4 MaxMSP-Praxis

- Erweiterung des Patches von letzten Woche: Vibrato

- Patch mit Harmonics und Subharmonics