LÖVE Tunes

Lowlevel Sound Synthese

vrld

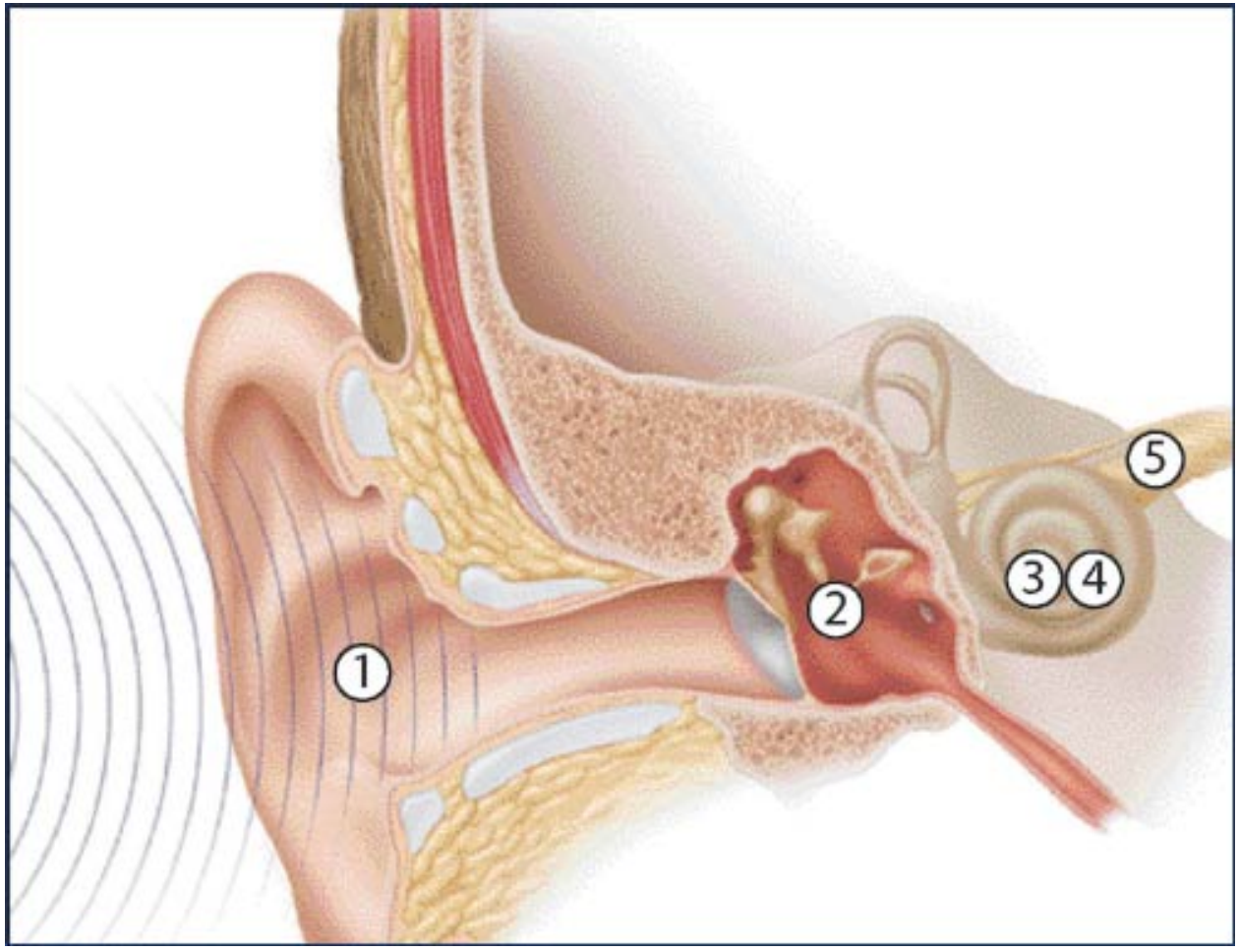
GPN 10

Disclaimer:

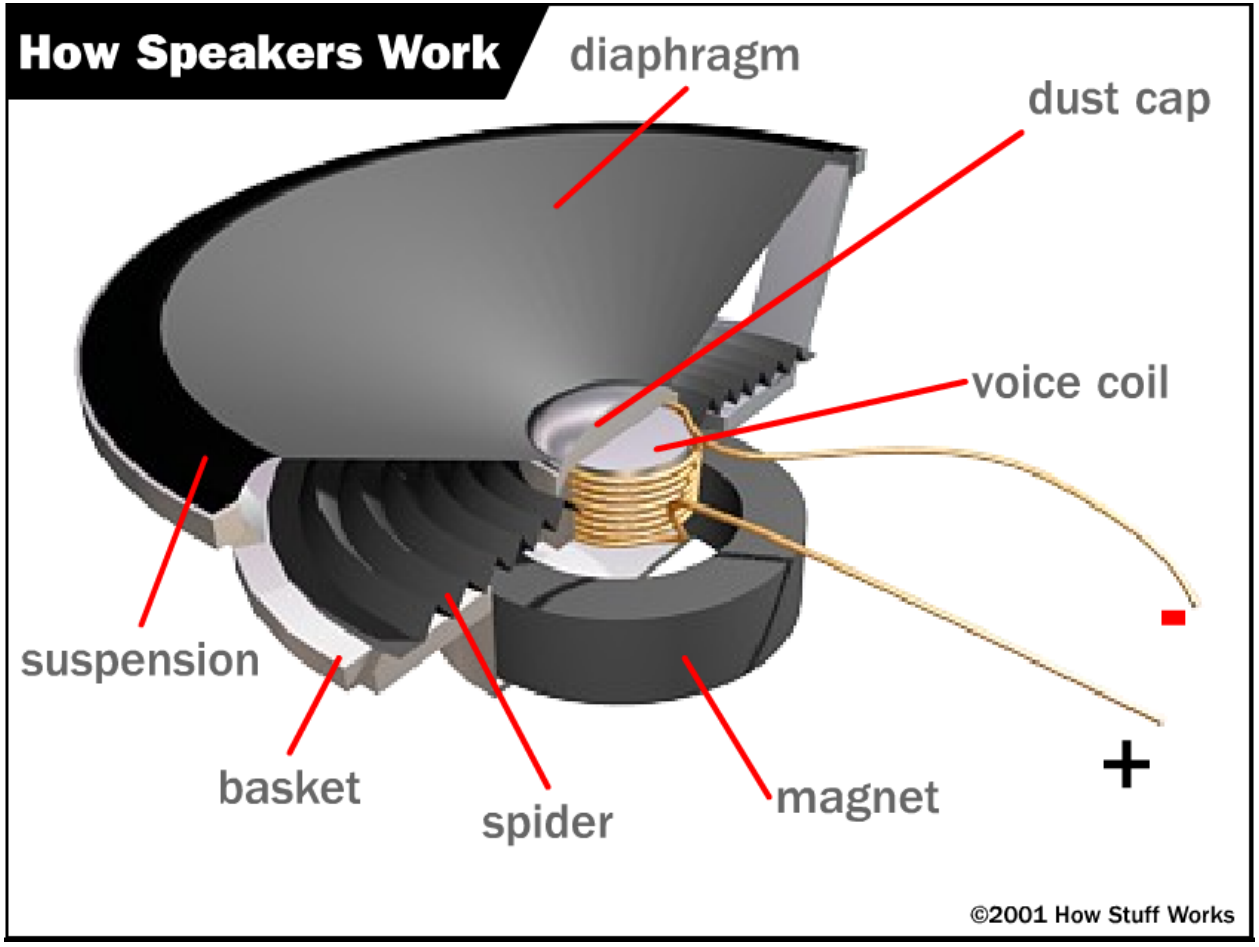
Ich habe eigentlich keine Ahnung, wovon ich rede.

Theorie :(

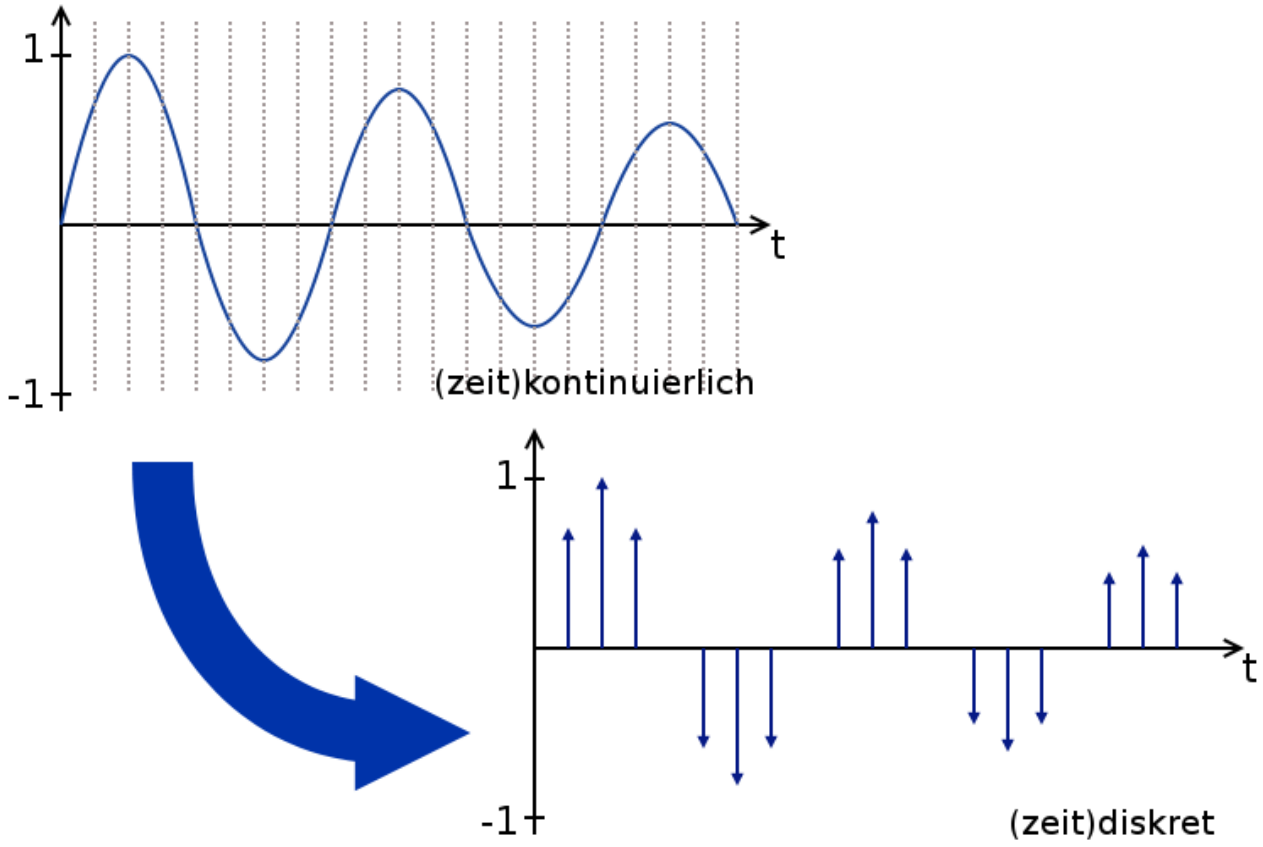
Schall



Lautsprecher



Abtastung

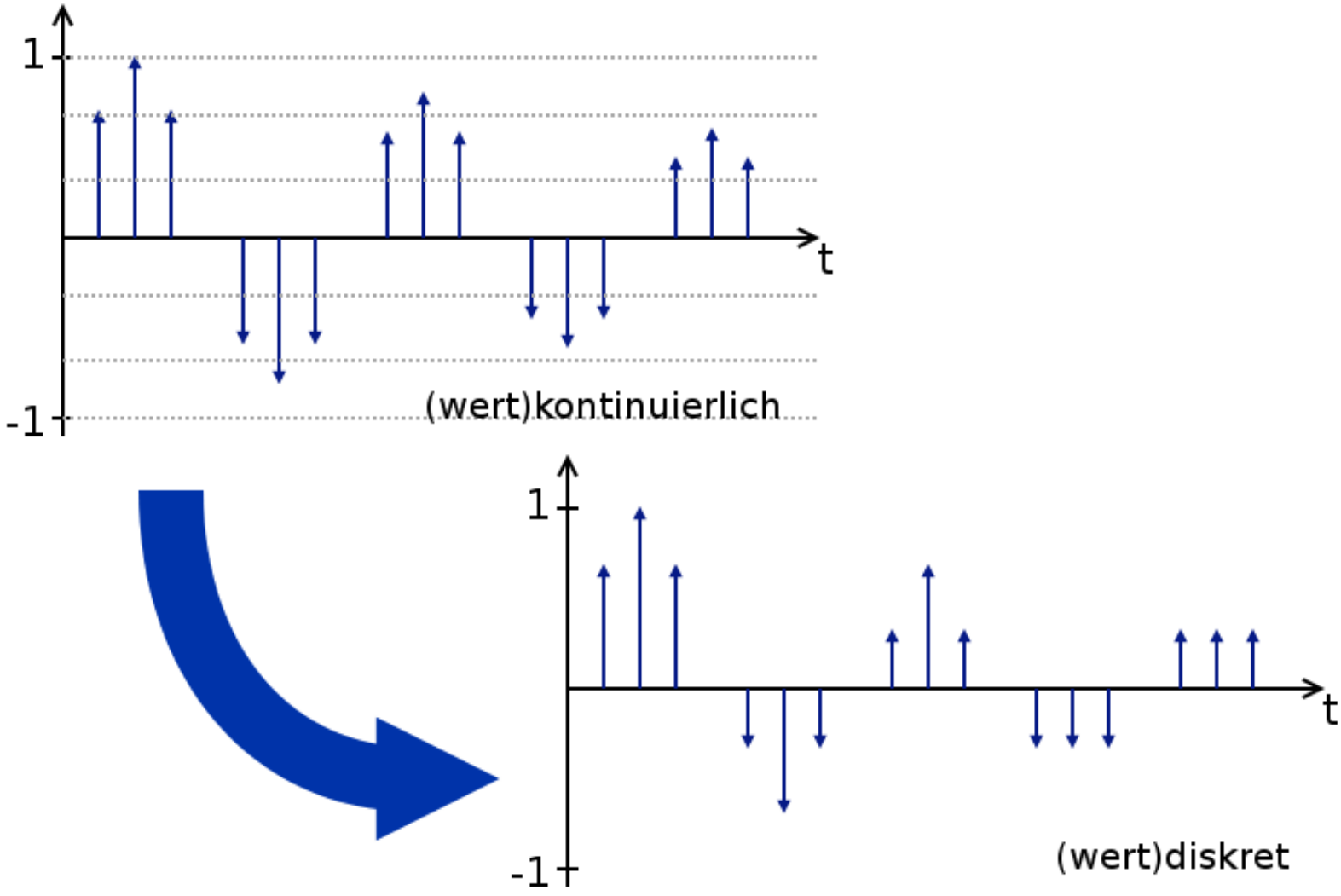


$$Samplerate = \frac{n_s}{t}$$

Nyquist-Shannon sampling theorem

$$f_{max} = \frac{1}{2} \cdot Samplerate$$

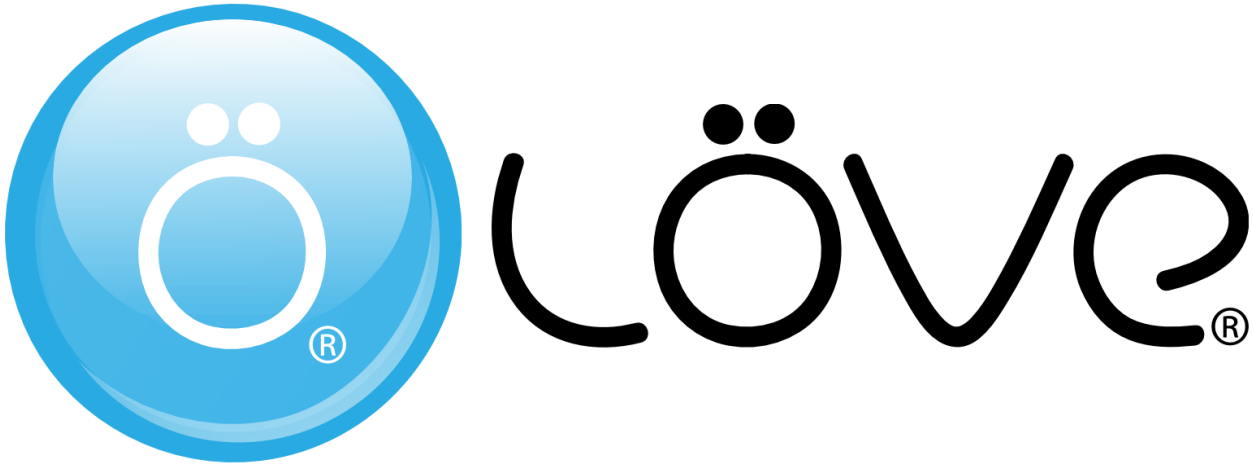
Quantisierung



Praxis!

Sprache

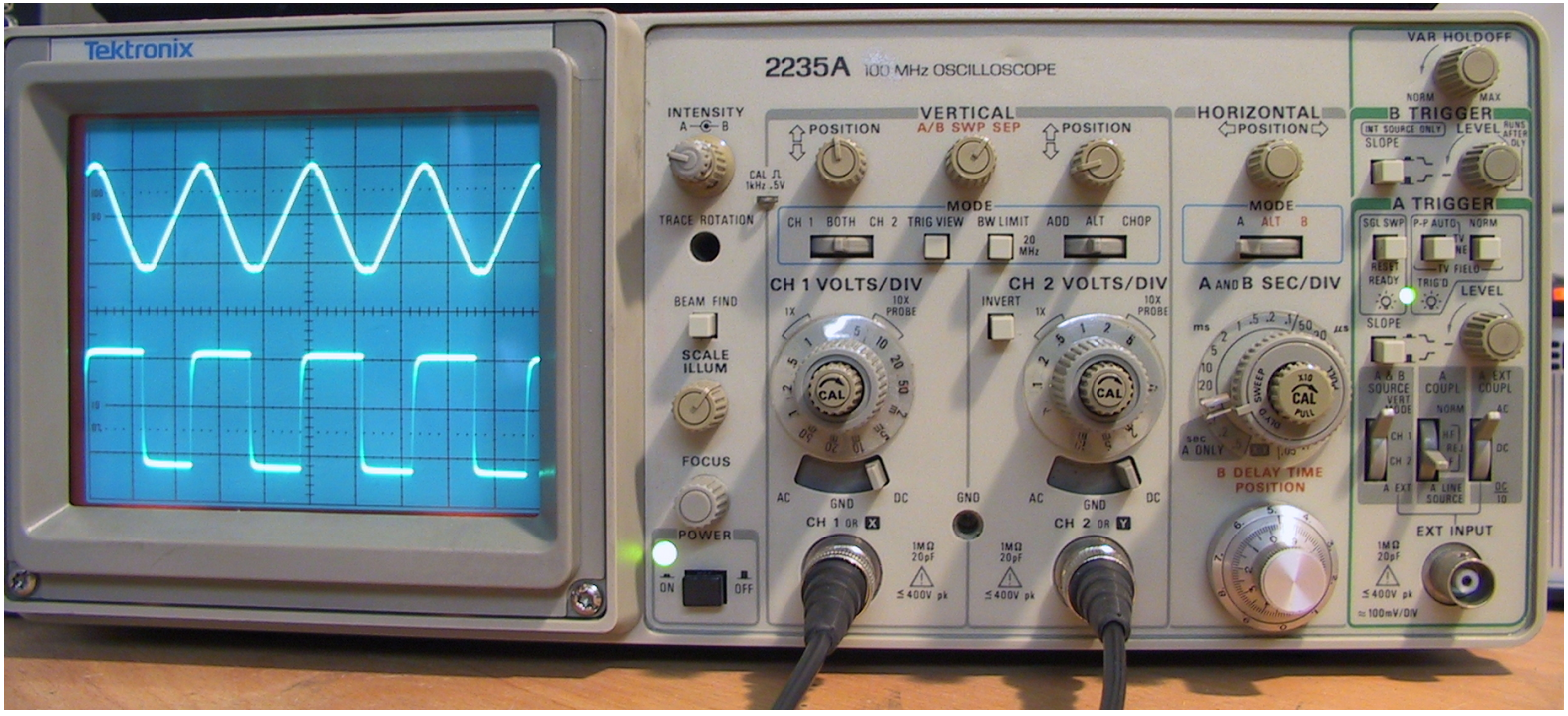
Toolkit



www.love2d.org[1]

[1] „**What is up with the umlaut in LÖVE?** We can't really say that we're making love, now can we? Plus, adding an umlaut makes anything awesome, just look at Motörhead." (ehemals http://love2d.org/faq)

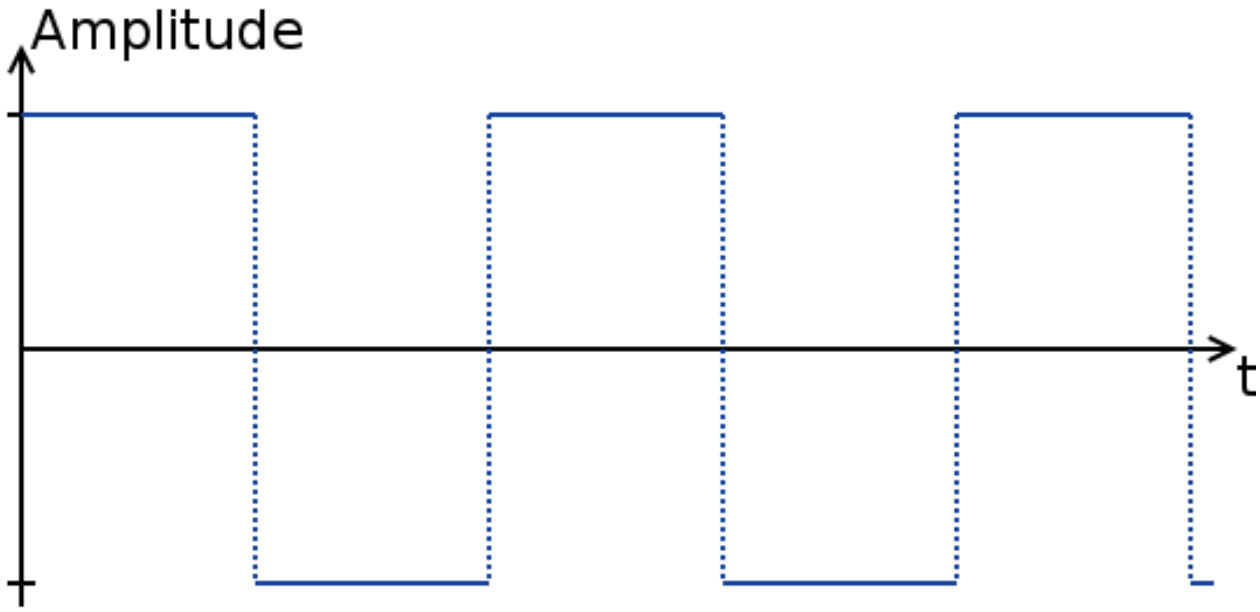
Generierende Funktion



Generator: $gen : [0, 1] \to [-1, 1]$

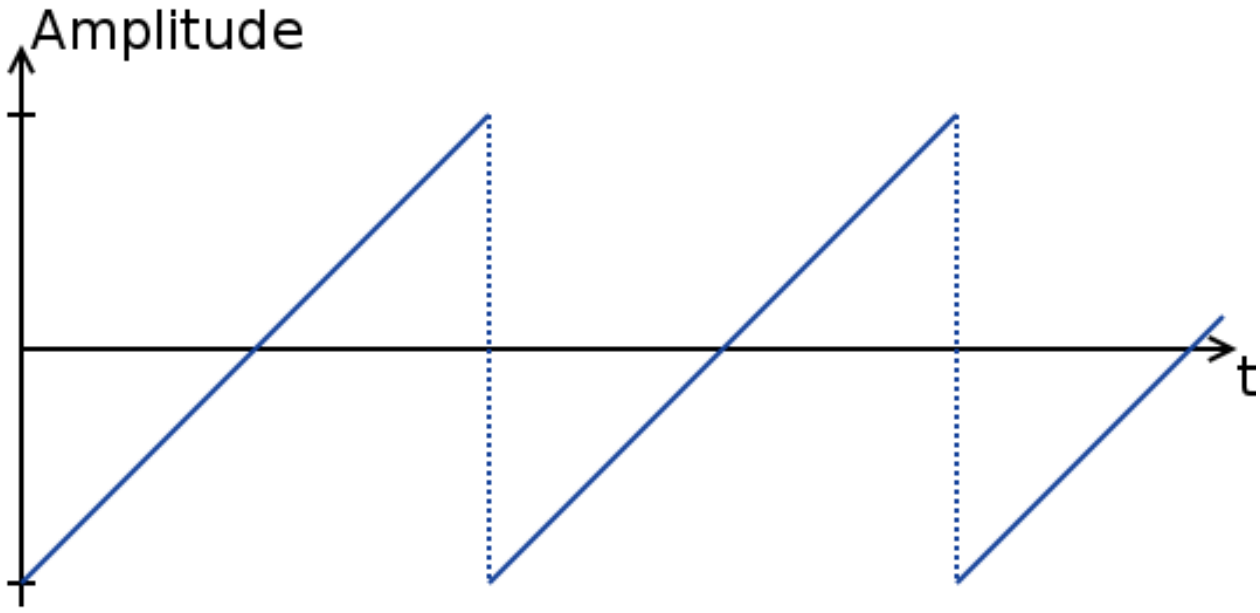
Basissignal: $s(t) = gen((t \cdot f) \mod 1)$

Rechteck



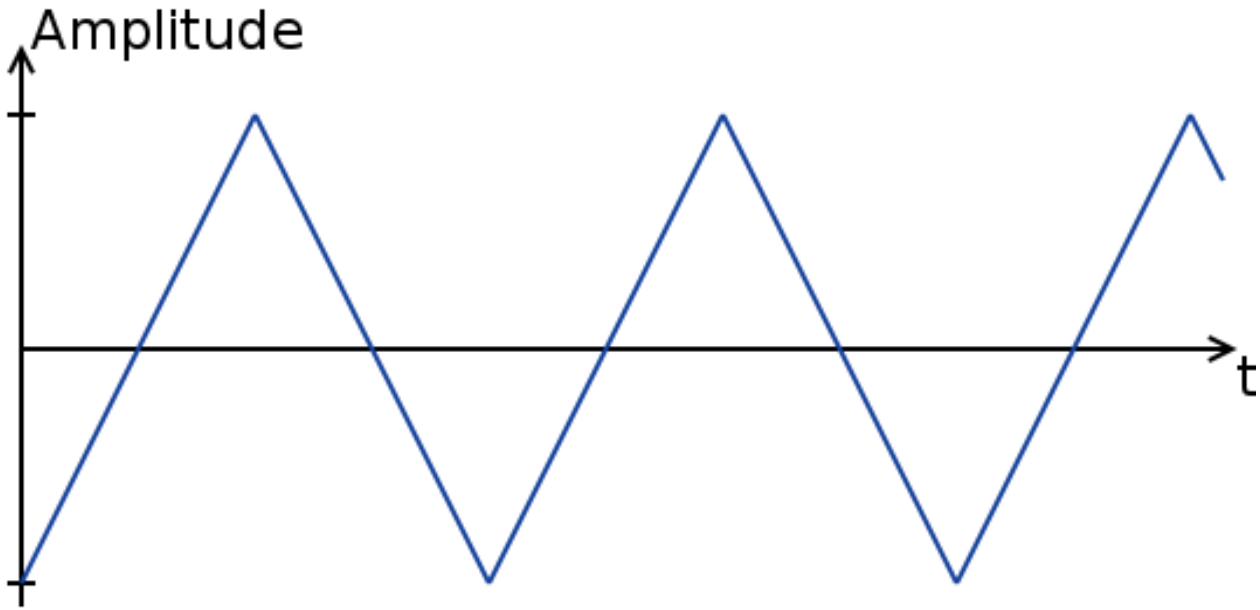
$$rect(\tau) = \begin{cases} -1 & wenn\ \tau < 0.5 \\ 1 & sonst \end{cases}$$

Sägezahn



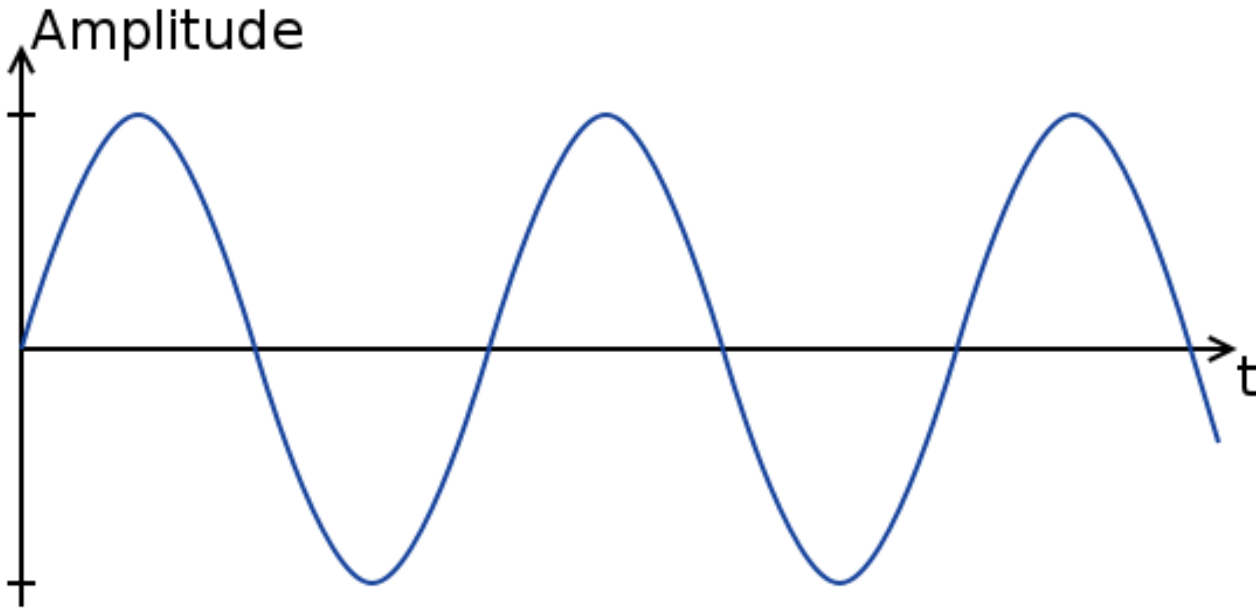
$$saw(\tau) = 2\tau - 1$$

Dreieck



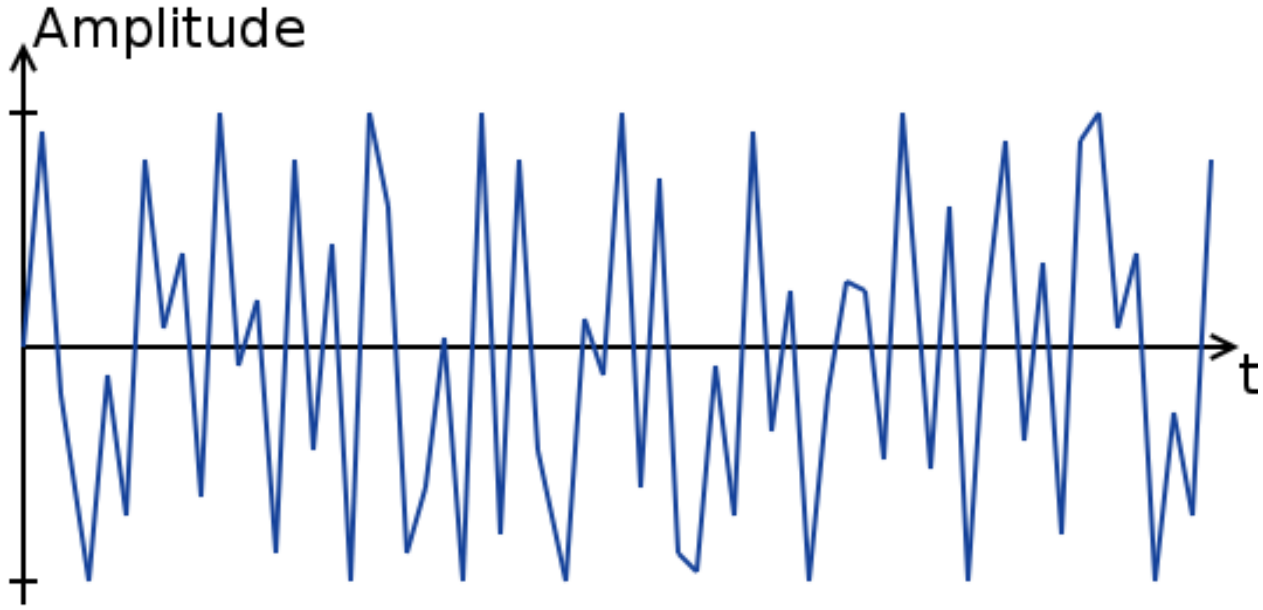
$$triangle(\tau) = \begin{cases} 4\tau - 1 & wenn\ \tau < 0.5 \\ 3 - 4\tau & sonst \end{cases}$$

Sinus



$$\mathit{sinus}(\tau) = \sin(2\pi\tau)$$

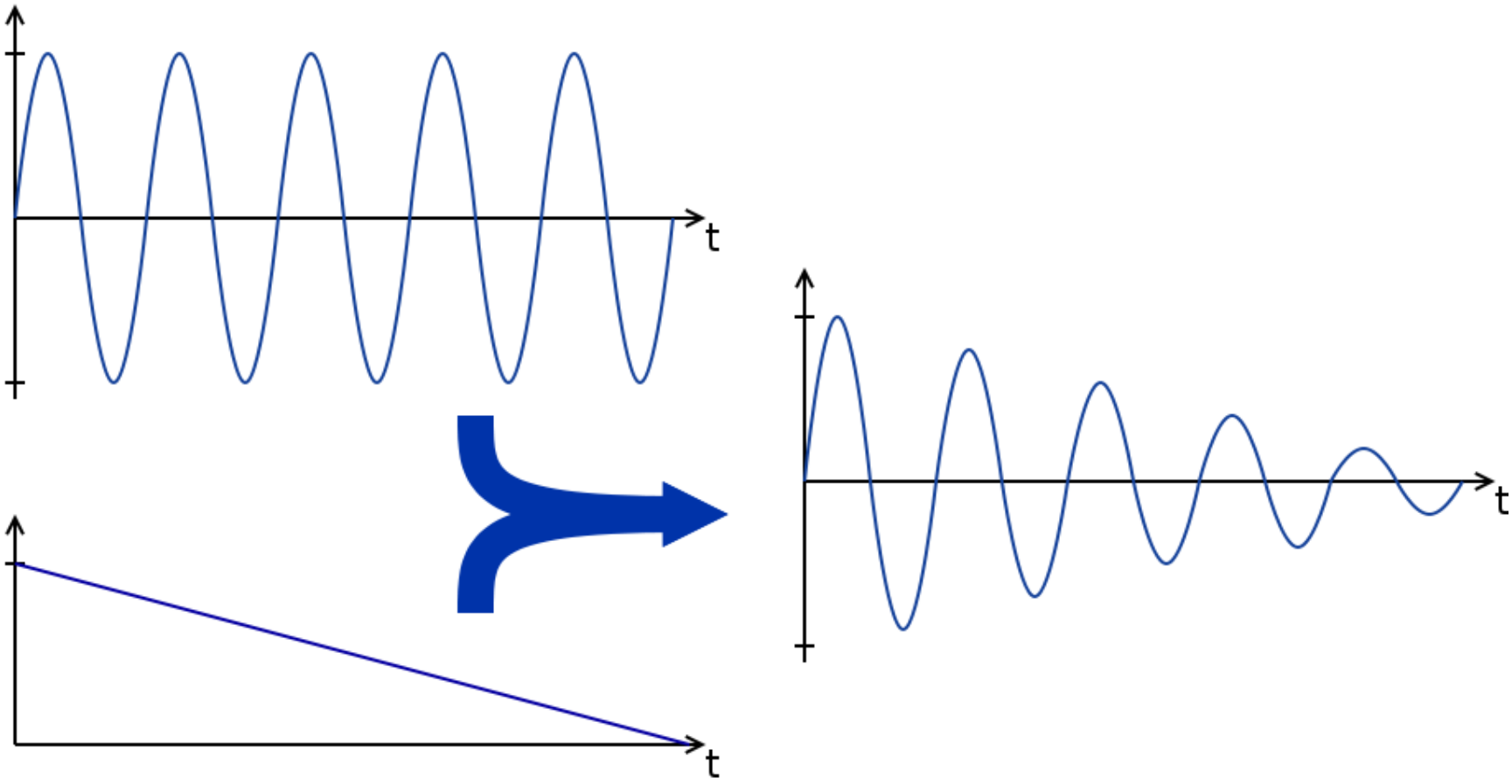
Rauschen



$$whitenoise(t) = random(-1, 1)$$

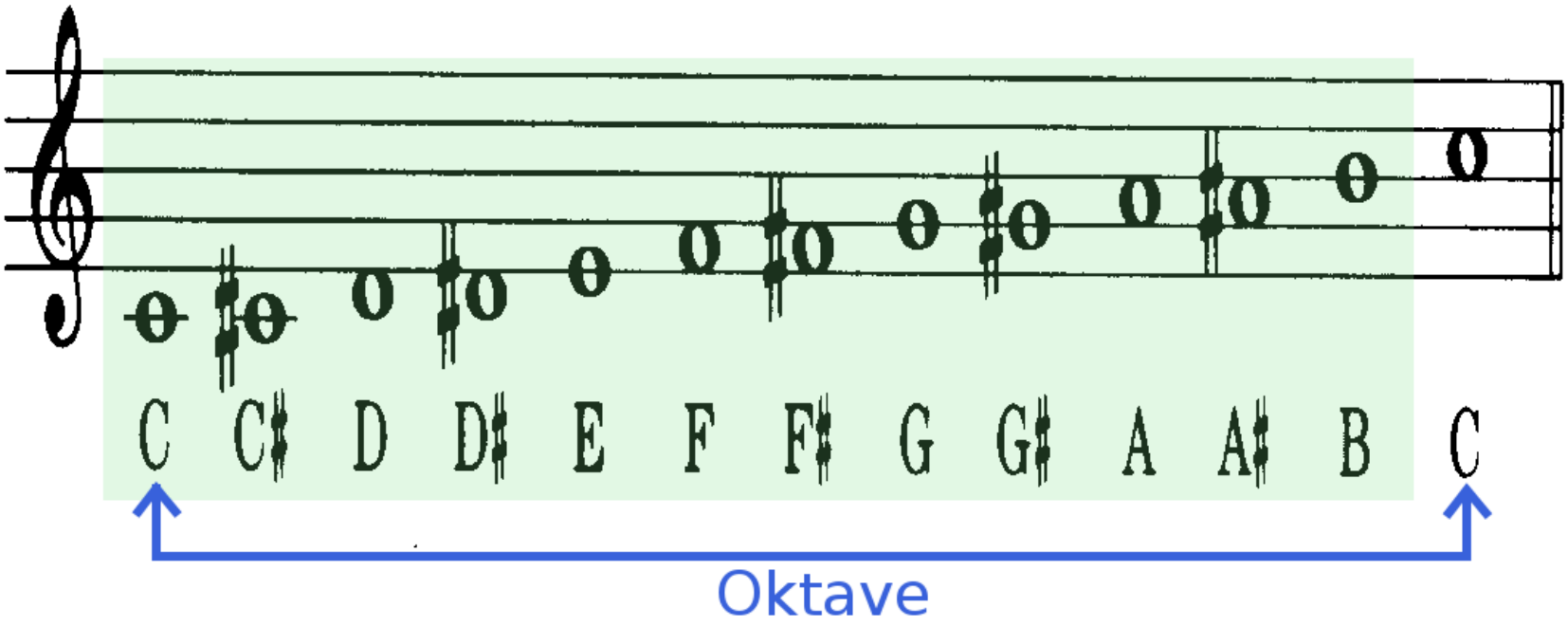
$$pinknoise(t) = random(-1, 1) + letztes\ sample$$

Hüllkurven

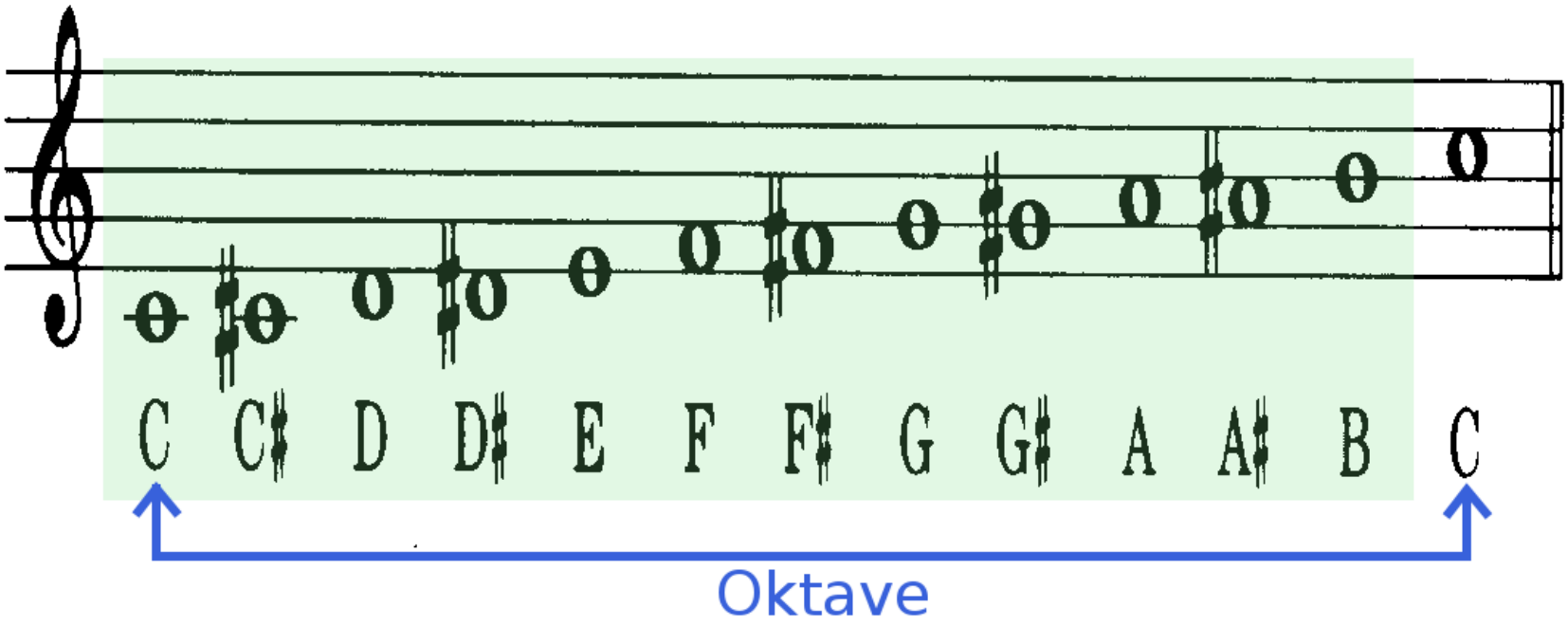


Mehr Theorie

Noten

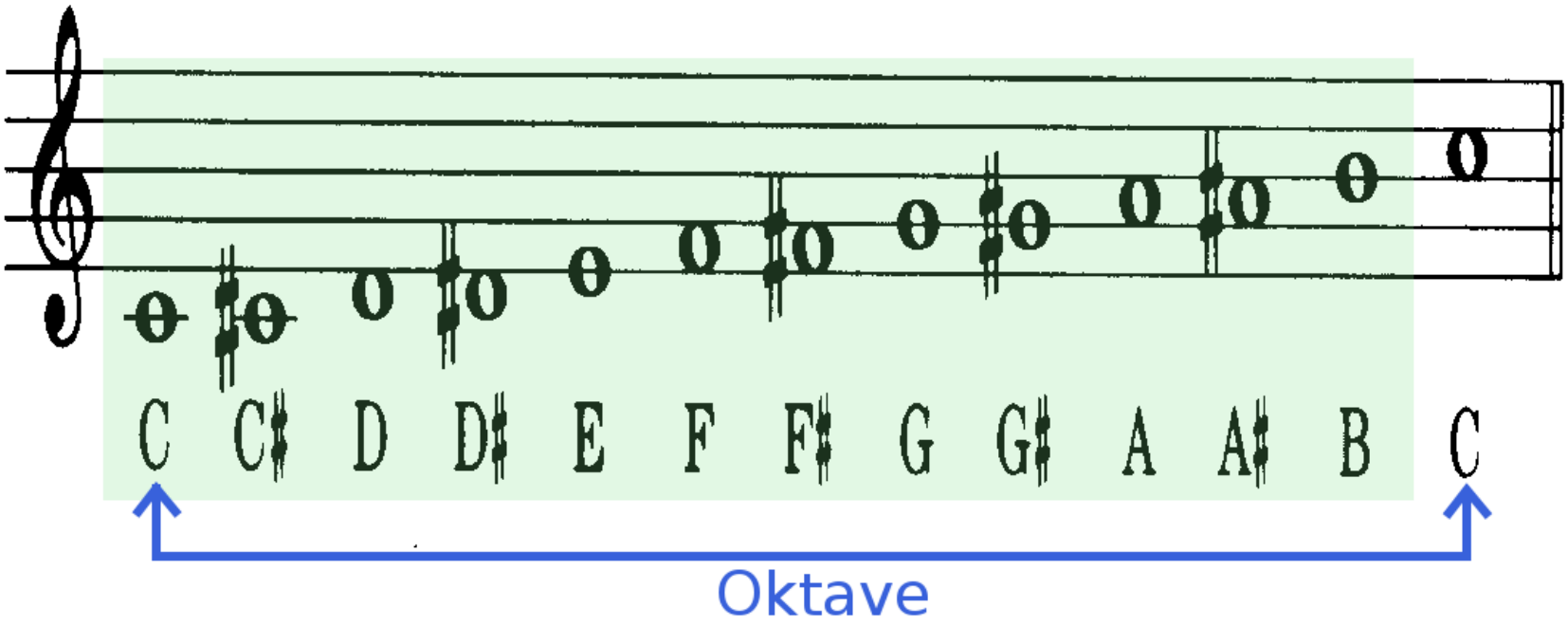


Noten



Oktave $\sim$ Frequenzverdoppelung

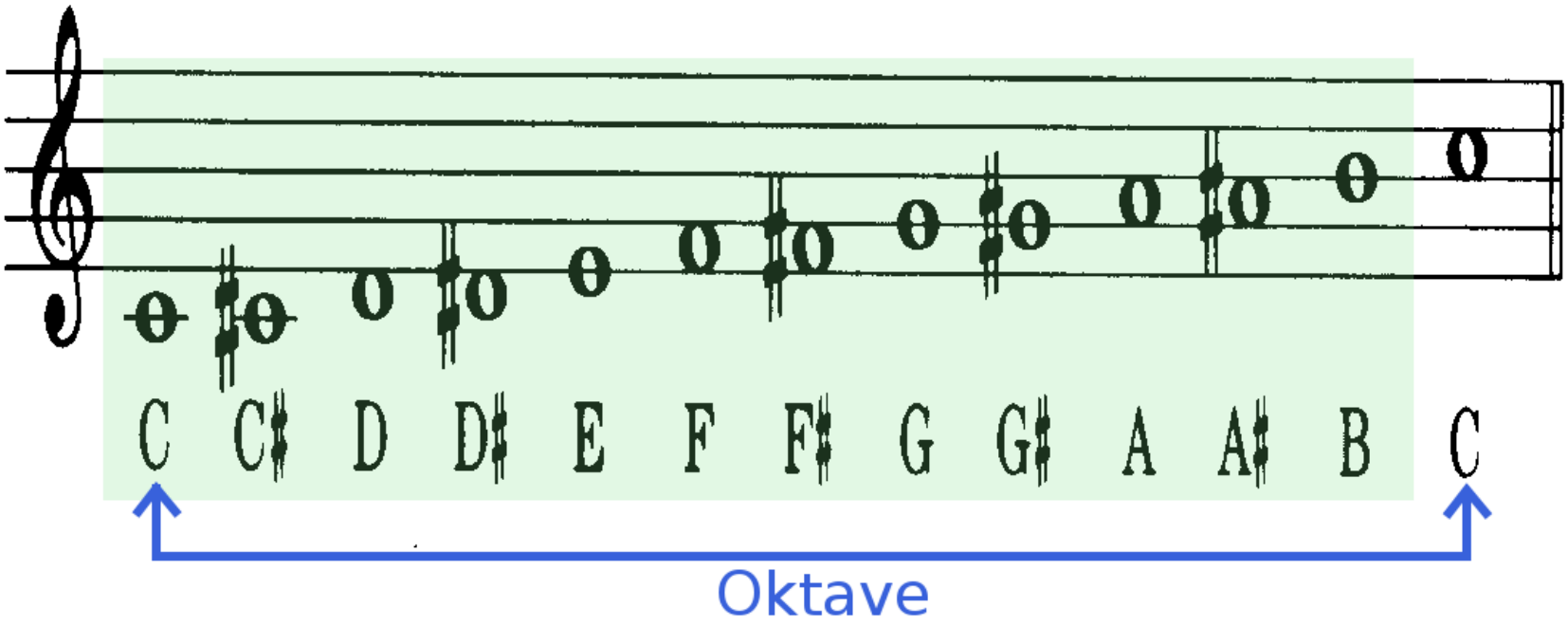
Noten



Oktave $\sim$ Frequenzverdoppelung

Halbtonschritt $\sim$ 12ter Teil einer Oktave

Noten

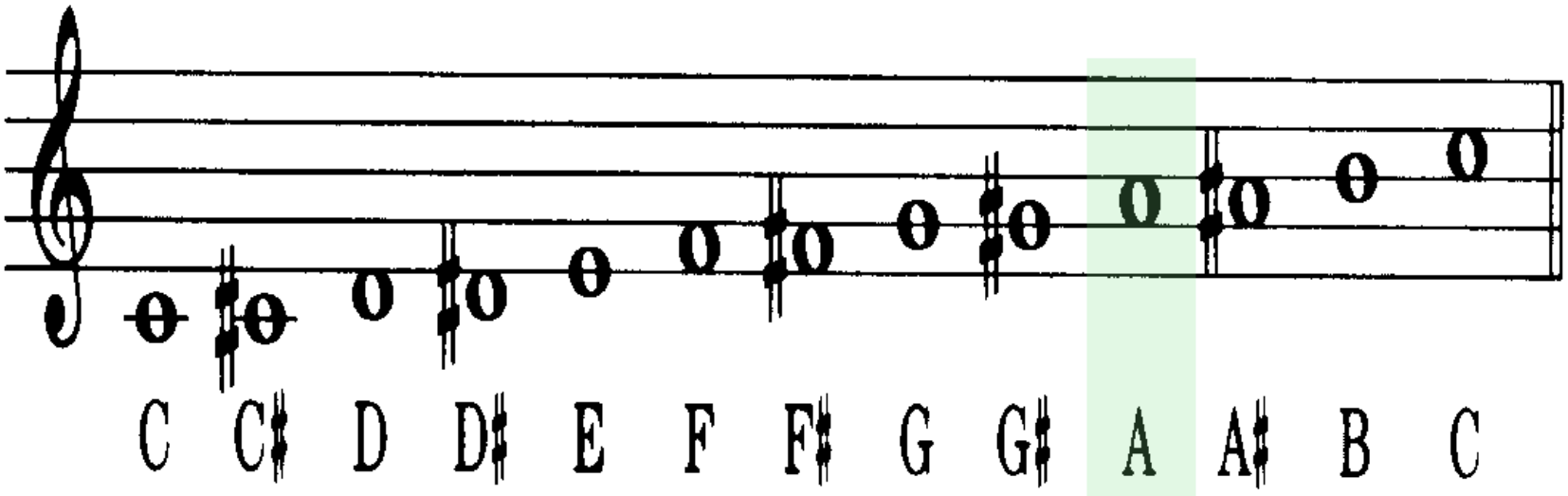


Oktave $\sim$ Frequenzverdoppelung

Halbtonschritt $\sim$ 12ter Teil einer Oktave

$$\Rightarrow \sqrt[12]{2}$$

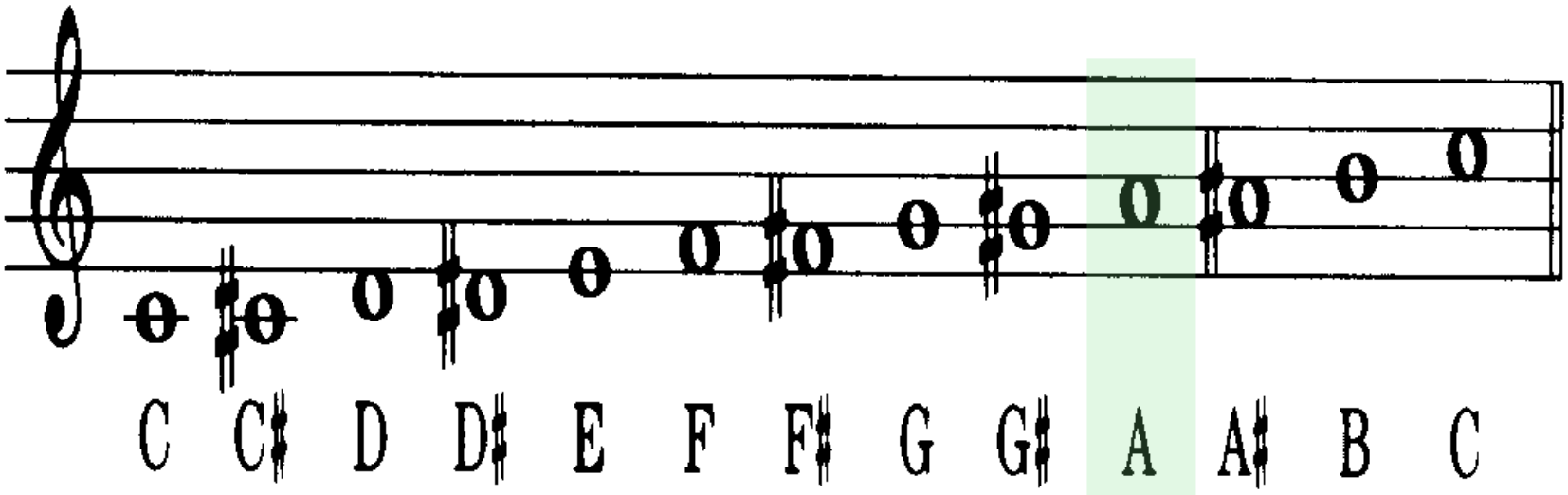
Kammerton



Kammerton

$$f_{A4} = 440Hz$$

Kammerton



Kammerton

$$f_{A4} = 440Hz$$

$$f_{G\#4} = 440Hz \cdot (\sqrt[12]{2})^{-1}$$
$$f_{G4} = 440Hz \cdot (\sqrt[12]{2})^{-2}$$
$$\ldots$$

$$f_{A\#4} = 440Hz \cdot (\sqrt[12]{2})^{1}$$
$$f_{B4} = 440Hz \cdot (\sqrt[12]{2})^{2}$$
$$\ldots$$

ENDE