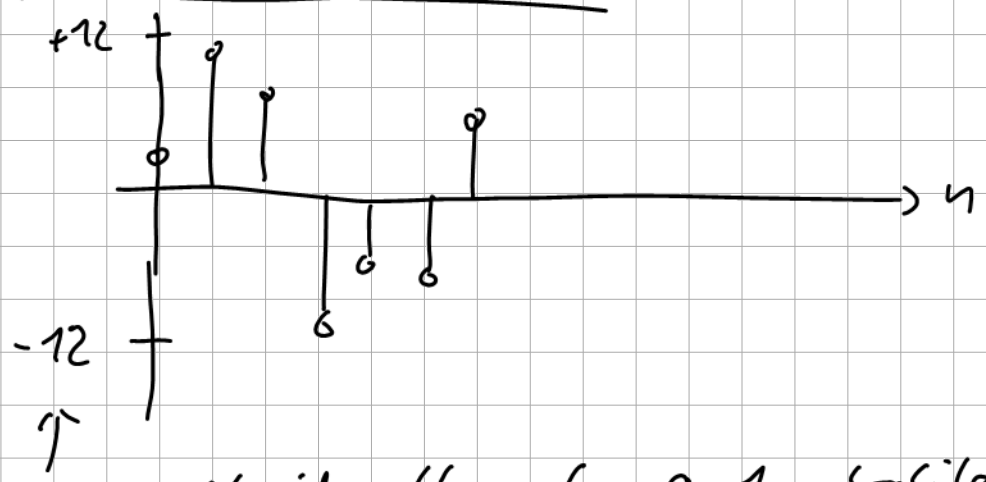
Variance = $\frac{1}{N} \sum_n \left(x_{(n)} - a\right)^2$

Uniform Normalization



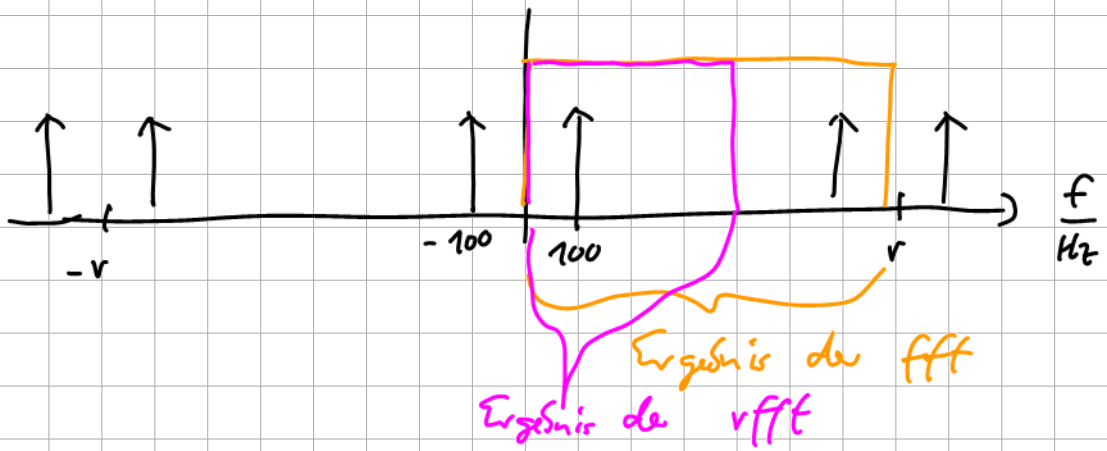
Dieser Wertebereich soll auf 0..1 abgebildet werden

↳ $y = x - a$

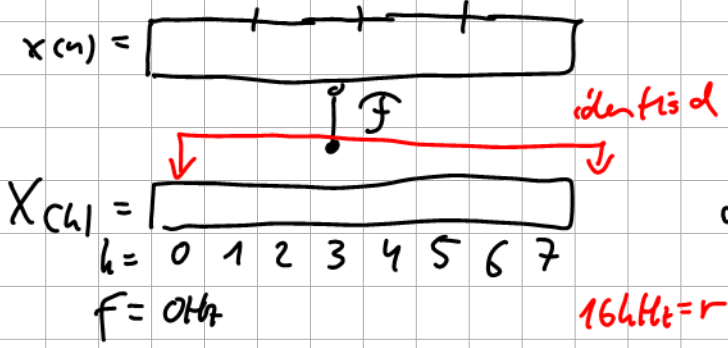
$z = y \cdot s$

$x = [-3, 5, 7, 3, 2]$ 0..1

$r = 1000$ Hz



$X = np.fft.rfft(\ldots)$ ← Besonderheit von Python



$0 \leq n < N$

$\downarrow$

$= 8$

ohne Zero Padding: $N = K$

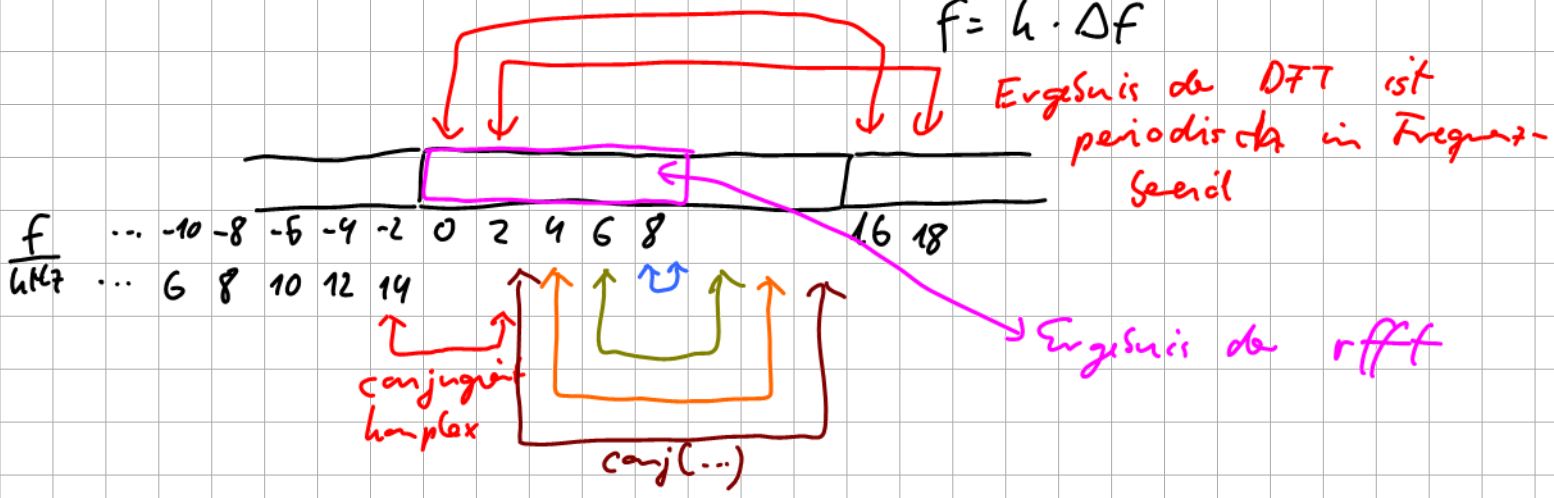
DC 4kHz 8 12
2kHz 6kHz 10 14

$r = 16\ kHz$

$\Delta f = \frac{1}{K \cdot T} = \frac{r}{K} = \frac{16\ kHz}{8}$

$= 2\ kHz$

$f = k \cdot \Delta f$

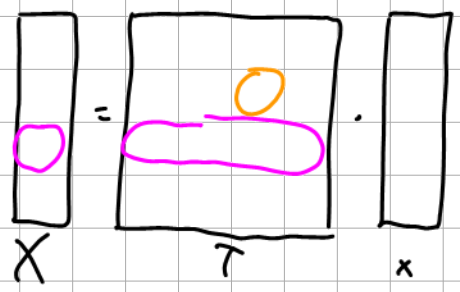


$$X(k) = \sum_{n=0}^{N-1} e^{-j2\pi \frac{nk}{K}} x(n)$$

N = Länge von x ← Index

K =

$X = T \cdot x$



$$T(1,2) = e^{-j2\pi \frac{kn}{K}}$$

k n

$$X(3) = \sum_n e^{-j2\pi \frac{n \cdot 3}{K}} \cdot x(n)$$

$x_w(n) = w(n) \cdot x(n)$