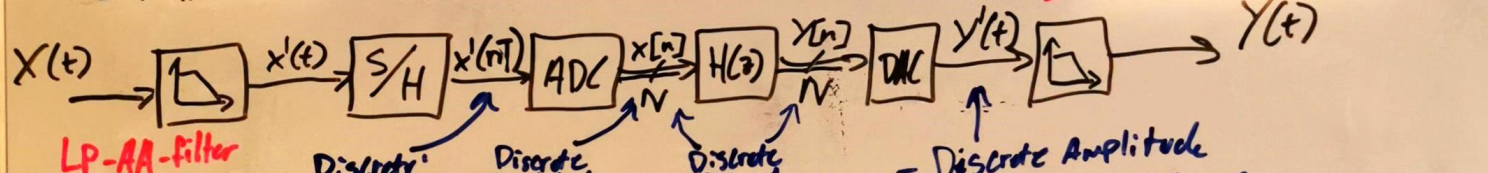
6. Ending ord lang de effekter, dynamik område, SNR, og formål ... af IIR-filter.

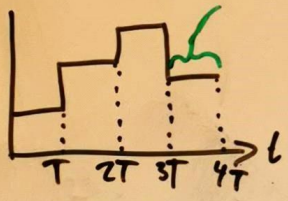


Q = Quantizations

S/H = Time Q ADC = Variable Q H(z) (Computer) = Variable + Coefficient Q

DAC = Time Q

Time Q: Mister info



Variable Q:

N bit ADC $\Rightarrow 2^N$ possible values for x_q ; Q-Step $\Delta = \left(\frac{1}{2}\right)^N$

at ADC output we have finite SNR

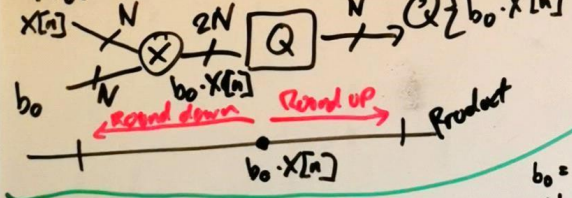
$$SNR \triangleq 20 \cdot \log\left(\frac{Signal(RMS)}{Noise(RMS)}\right)$$

the SNR output of ADC is increased 6dB when N is increased!

$$SNR = 6.02N + 1.76dB$$

H(z) - Q

Multiplication between Signal and Coef.



Quantizer which takes us from 2N → N bits

Introduces error

$$e[n] = b_0 X[n] - Q\{b_0 \cdot X[n]\}$$

(2N Bit, N Bit)

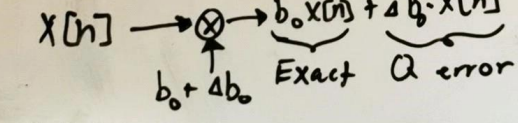
Due to e[n] the output SNR is not infinite.

se slide 12 lec 7

b_0 = exact

Δb_0 = N bits implementation

Coefficient Q



Affects pole/zero location.

You can make sensitivity analysis →

TLDR: The closer poles are the more sensitiv they are to Coefficient Q.