



Course material

Course:

Digital Signal Processing II

Video:

2.1.5.a Filter classification in the frequency domain

Concepts (extracted from automatically generated subtitles):

Low-pass filters. Classification of signals. High-pass filters. Low frequencies. High frequencies. Classification. Bandpass filters. Moving average. Filters. Frequency response. Broad categories. Shape of their magnitude response. Origin. Band of frequencies. Filter.



[to video sequence search](#)
(within Digital Signal Processing II.)



[to video](#)

Center for Digital Education. More educational support material here:

<https://exoset.epfl.ch/booc/>

Filter types according to magnitude response

► Lowpass

► Highpass

► Bandpass

► Allpass

Moving Average and Leaky Integrator are lowpass filters

So we can classify filters according to four broad categories based on the shape

notes

summary

0m 0s



Filter types according to magnitude response

► Lowpass

► Highpass

► Bandpass

► Allpass

Moving Average and Leaky Integrator are lowpass filters

of their magnitude response. Low-pass filters are filters that let the low frequencies live and kill everything else. High-pass filters do the opposite,

notes

summary

0m 1s



Filter types according to magnitude response

- ▶ Lowpass
- ▶ Highpass
- ▶ Bandpass
- ▶ Allpass

Moving Average and Leaky Integrator are lowpass filters

they let high frequencies go through and they kill low frequencies, in particular frequencies around zero. Bandpass filters let only a band of frequencies go

notes

summary

0m 13s



Filter types according to magnitude response

- ▶ Lowpass
- ▶ Highpass
- ▶ Bandpass
- ▶ Allpass

Moving Average and Leaky Integrator are lowpass filters

through in the middle of the frequency band and all-pass filters are filters for which the magnitude is a constant over the entire frequency band. So this classification really mirrors the classification of signals that we

notes

summary

0m 25s



Filter types according to magnitude response

- ▶ Lowpass
- ▶ Highpass
- ▶ Bandpass
- ▶ Allpass

Moving Average and Leaky Integrator are lowpass filters

5.5

90

introduced when we explained a discrete time Fourier transform. The moving average and leaky integrator, as we could see in the previous module, have a

notes

summary

0m 37s



Filter types according to phase response

- ▶ Linear phase
- ▶ Nonlinear phase

5.5

91

frequency response which is concentrated around the origin so they belong to the low-pass filter category. We can also classify filters according to their phase response, this is less common, but it's important to know whether a filter has a linear phase characteristic or a nonlinear phase characteristic.

notes

summary

0m 49s

