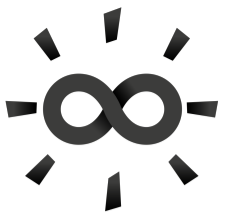


The Bright Side of Mathematics

The following pages cover the whole Fourier-Transformation course of the Bright Side of Mathematics. Please note that the creator lives from generous supporters and would be very happy about a donation. See more here: <https://tbsom.de/support>

Have fun learning mathematics!



Fourier Transform - Part 1

↳ applications in physics, computer science, ...
(JPEG compression, equalization of audio recordings, ...)

Fourier series

$$f: \mathbb{R} \rightarrow \mathbb{R} \text{ (or } \mathbb{C})$$

periodic function

$$f: [a, b) \rightarrow \mathbb{R} \text{ (or } \mathbb{C})$$

↑ ↓ transform

$$\hat{f}: \mathbb{Z} \rightarrow \mathbb{C}$$

continuous Fourier transform

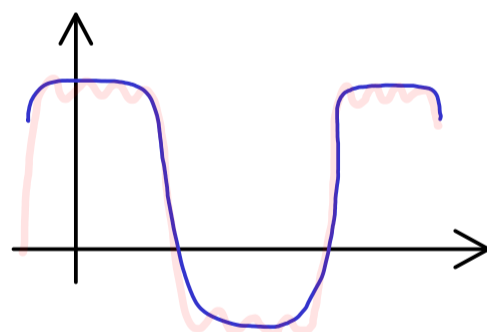
$$f: \mathbb{R}^n \rightarrow \mathbb{R} \text{ (or } \mathbb{C})$$

↑ ↓ transform

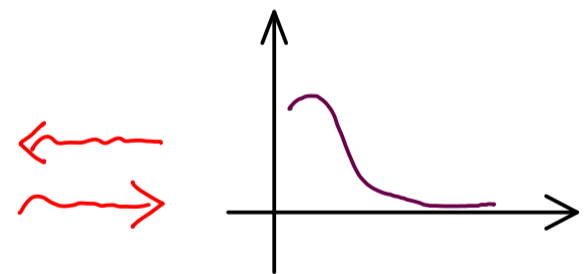
$$\hat{f}: \mathbb{R}^n \rightarrow \mathbb{C}$$

Fourier analysis on groups
general measure theory

Idea of Fourier transform:



time domain



frequency domain



Requirements:

Real Analysis

Linear Algebra

Abstract Linear Algebra



Fourier Transform