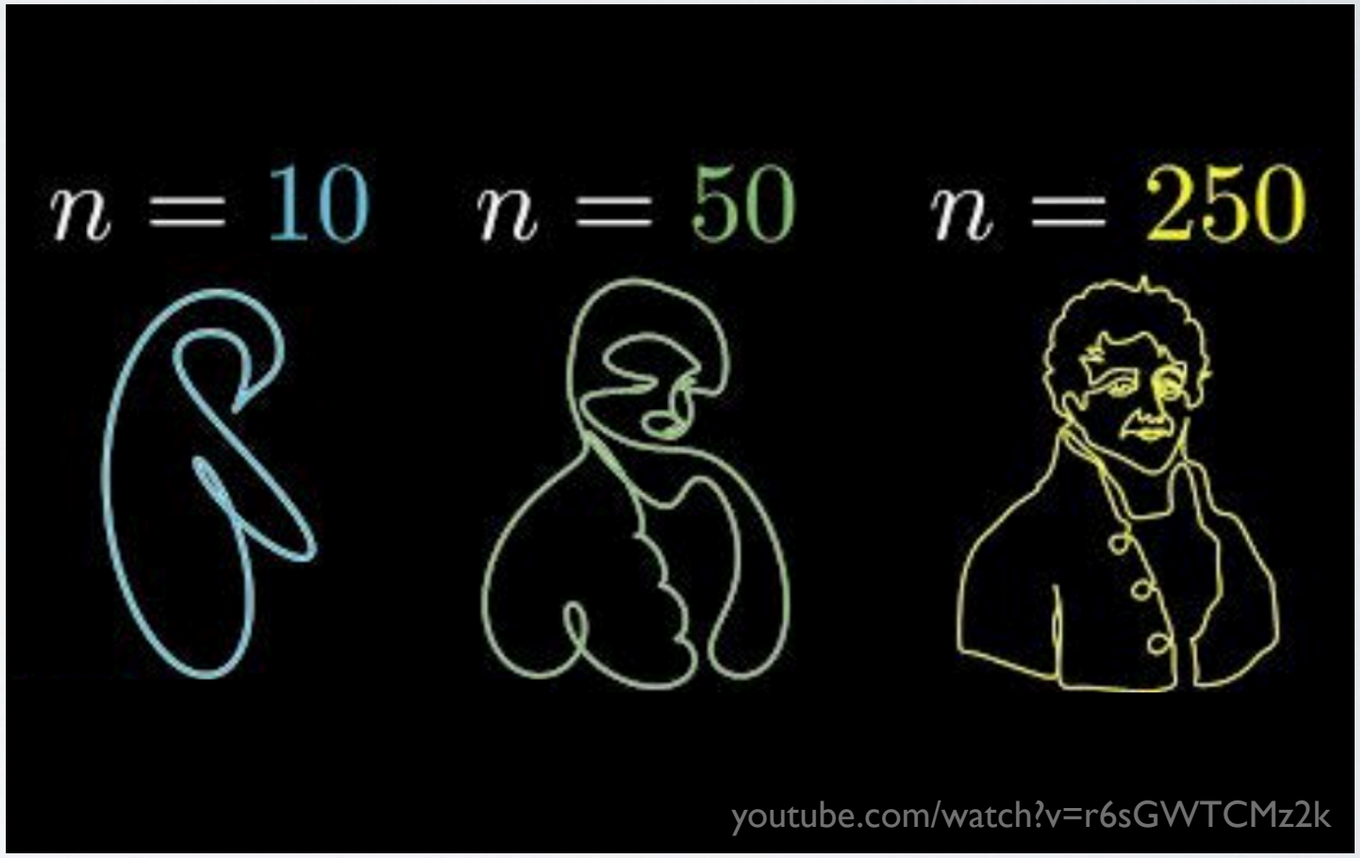
Week 9 - #2

Fourier Series and Transforms (II)



Today: Ch 7

Next Class: Ch 8

Ji-hoon Kim (Seoul National University)

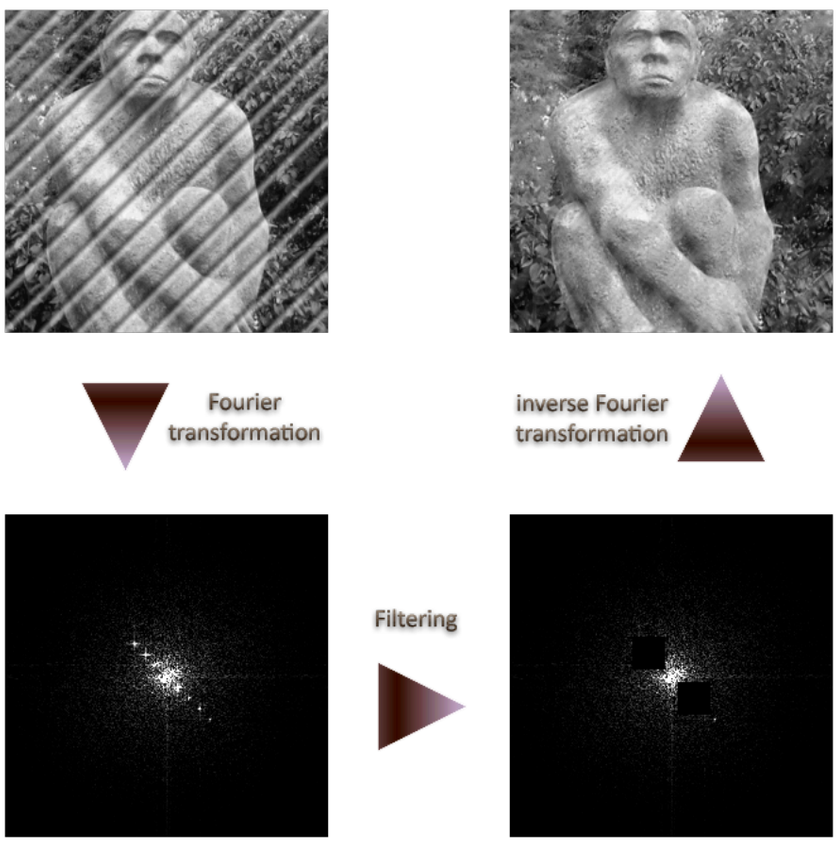
Rudimentary Mathematical Methods of Physics (Fall 2025): Quiz #13

— [open book and open note, "and" cellphone or laptop, drop it off as you leave the class] —

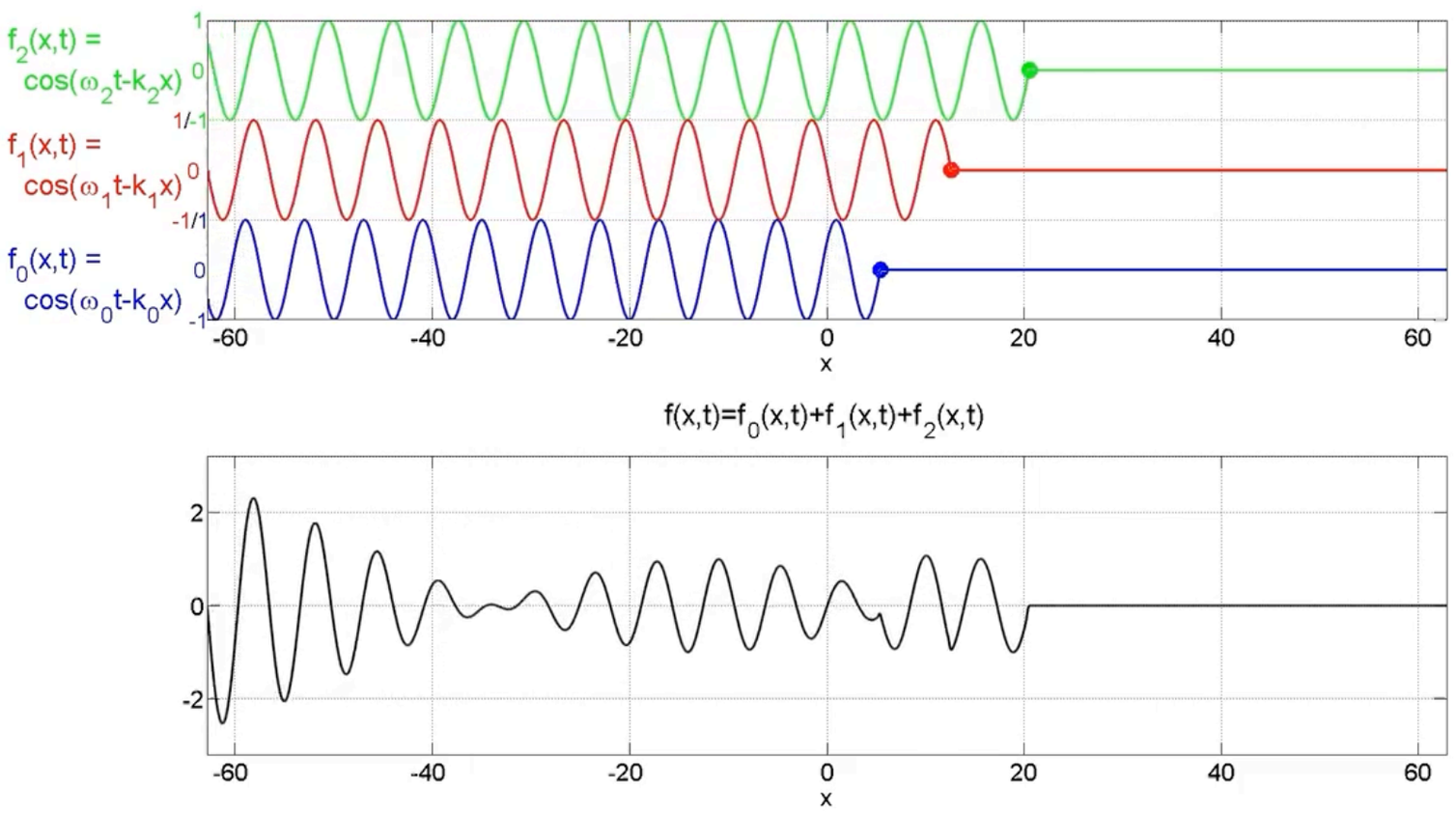
Please write down your name and student ID in the top right corner. (0.0 pt: no paper found with your name / 0.5 pt: paper found with your name and some answers / 1.0 pt: good answers)

1. Boas, Chapter 7, Section 5, Problem 2

2. Briefly explain, in layman's terms and without using detailed math, what each of the figure/movie below is trying to visualize.



Fourier filtering, Wikipedia commons



youtube.com/watch?v=ePJdV75fT5o

Rudimentary Mathematical Methods of Physics (Fall 2025): Suggested Problems in Chapter 7, Boas, 3rd ed.

The problems I suggest you to take a deeper look into include, but are not limited to, the following. The class homework assignments will mainly be from this list.

- Section 02: Problems 12, 17
- Section 03: Problems 8
- Section 04: Problems 1, 13, 16
- Section 05: Problems 1, 3, 4, 7, 9, 11
- Section 06: Problems 10, 12 (for Problem 5.7 and 5.9), 14, 15
- Section 07: Problems 7, 9, 11, 13
- Section 08: Problems 2, 14, 15(a)(b), 20
- Section 09: Problems 9, 10, 11, 19, 20, 23
- Section 10: Problems 2
- Section 11: Problems 6, 8
- Section 12: Problems 6, 9, 10, 15, 18, 21, 23, 26, 31, 35
- Section 13: Problems 4, 8, 14, 23

48 problems / 218 total

Rudimentary Mathematical Methods of Physics (Fall 2025): Suggested Problems in Chapter 8, Boas, 3rd ed.

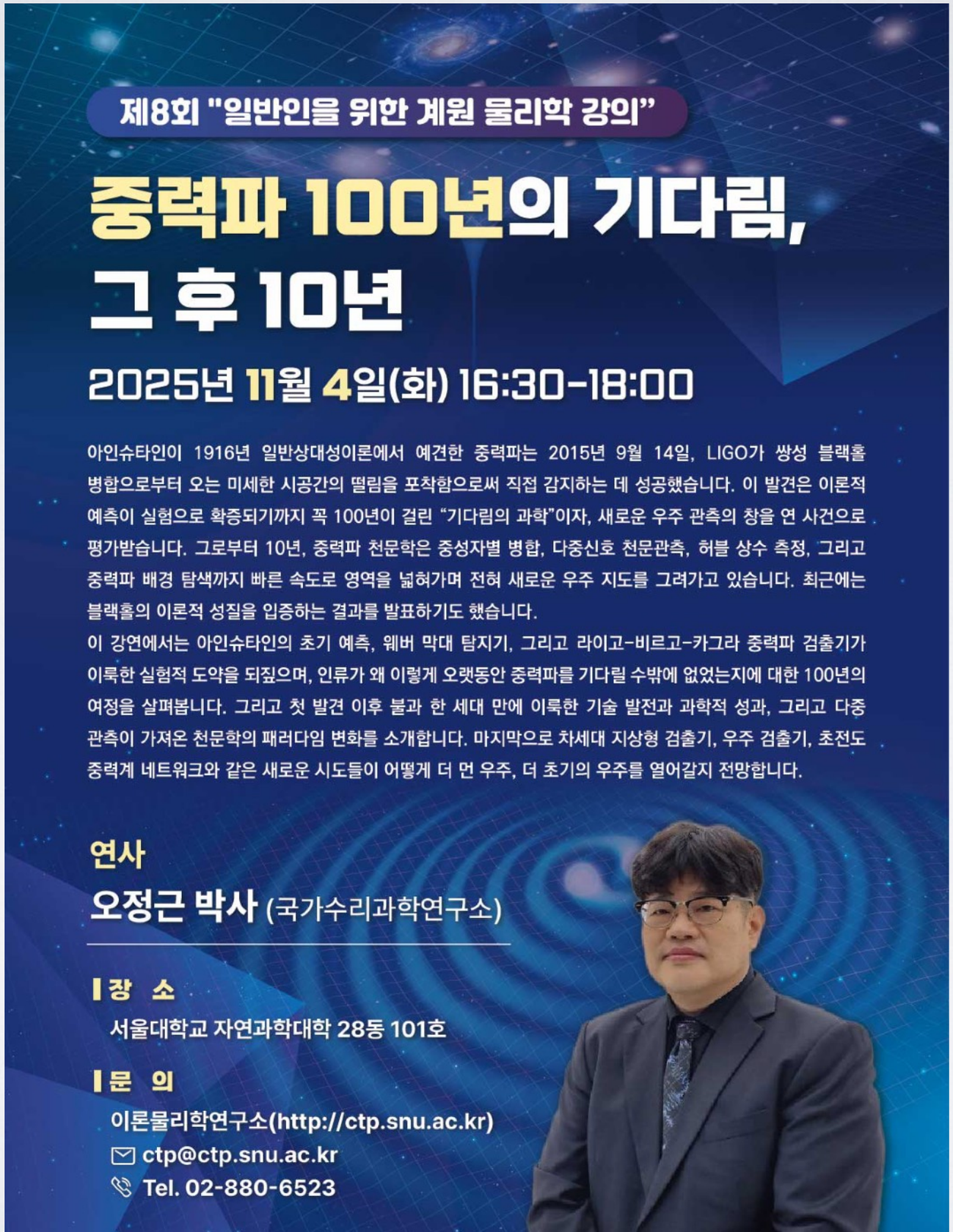
The problems I suggest you to take a deeper look into include, but are not limited to, the following. The class homework assignments will mainly be from this list.

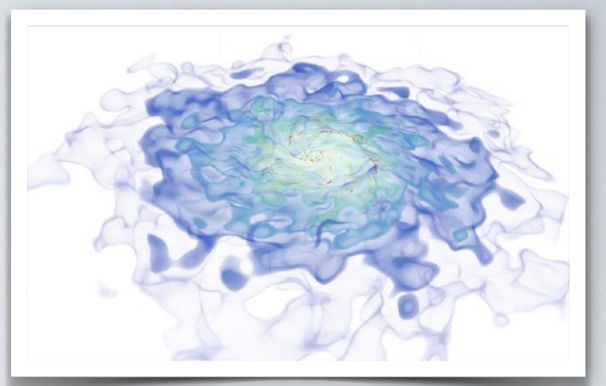
- Section 01: Problems 4
- Section 02: Problems 6, 8, 11, 12, 20(b), 34
- Section 03: Problems 4, 11, 14, 16, 20
- Section 04: Problems 2, 6, 8, 10, 15, 20
- Section 05: Problems 6, 9, 11, 13, 15, 24, 31(c)(d)
- Section 06: Problems 6, 8, 10, 14, 21, 23, 28, 34, 35, 42
- Section 07: Problems 2, 3, 8, 17, 22, 30
- Section 08: Problems 1, 2, 4, 7, 10, 11, 12, 19, 22, 26
- Section 09: Problems 8, 9, 14, 16, 28, 30, 34, 38
- Section 10: Problems 3, 8, 11, 14, 18
- Section 11: Problems 6(b)(c), 7, 9, 15, 21, 23, 25
- Section 12: Problems 2, 4, 6, 11, 16

<u>Chapter 13, Sections 1-4</u>

- Section 01: Problems 1, 4
- Section 02: Problems 1, 2, 3, 7
- Section 03: Problems 2, 3, 7
- Section 04: Problems 2, 5

Public Lecture (계원물리학강의, Nov. 4, Bldg 28)

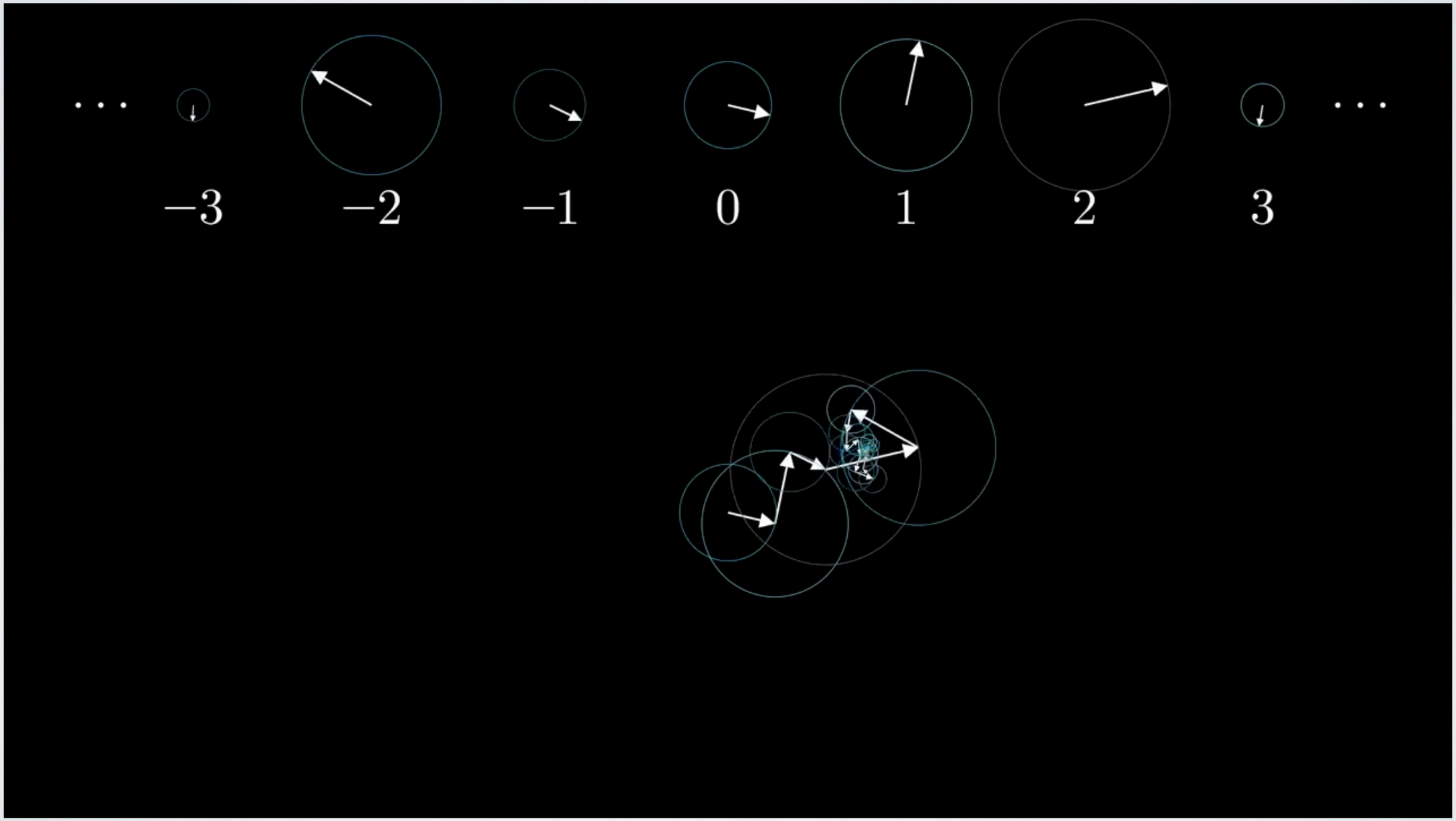




Complex Fourier Series

Complex Fourier Series

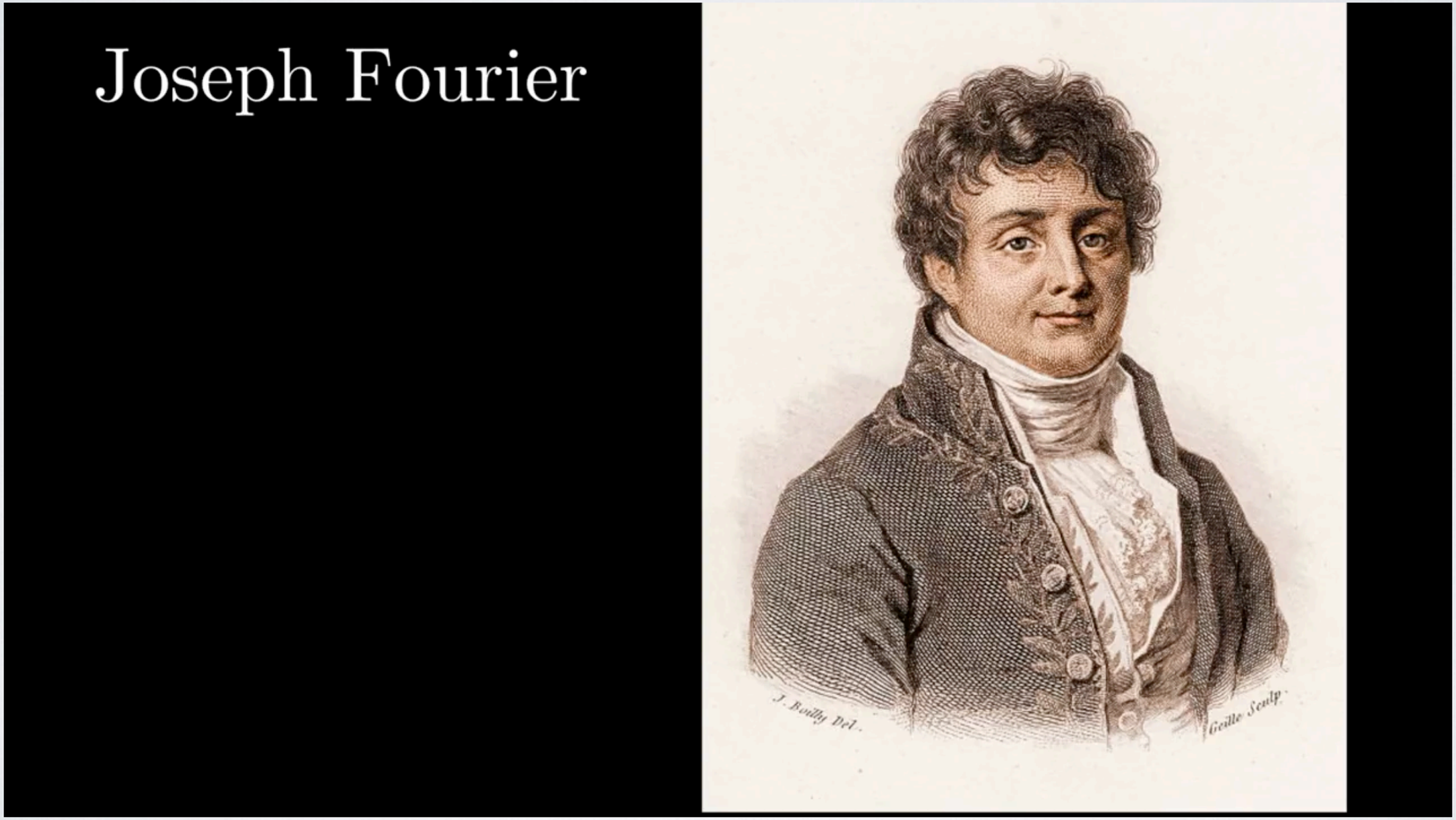
- A visualization of complex Fourier series.



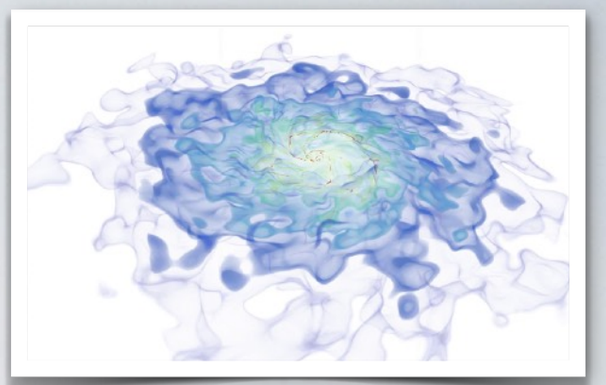
youtube.com/watch?v=r6sGWTCMz2k

Complex Fourier Series

- A visualization of complex Fourier series.



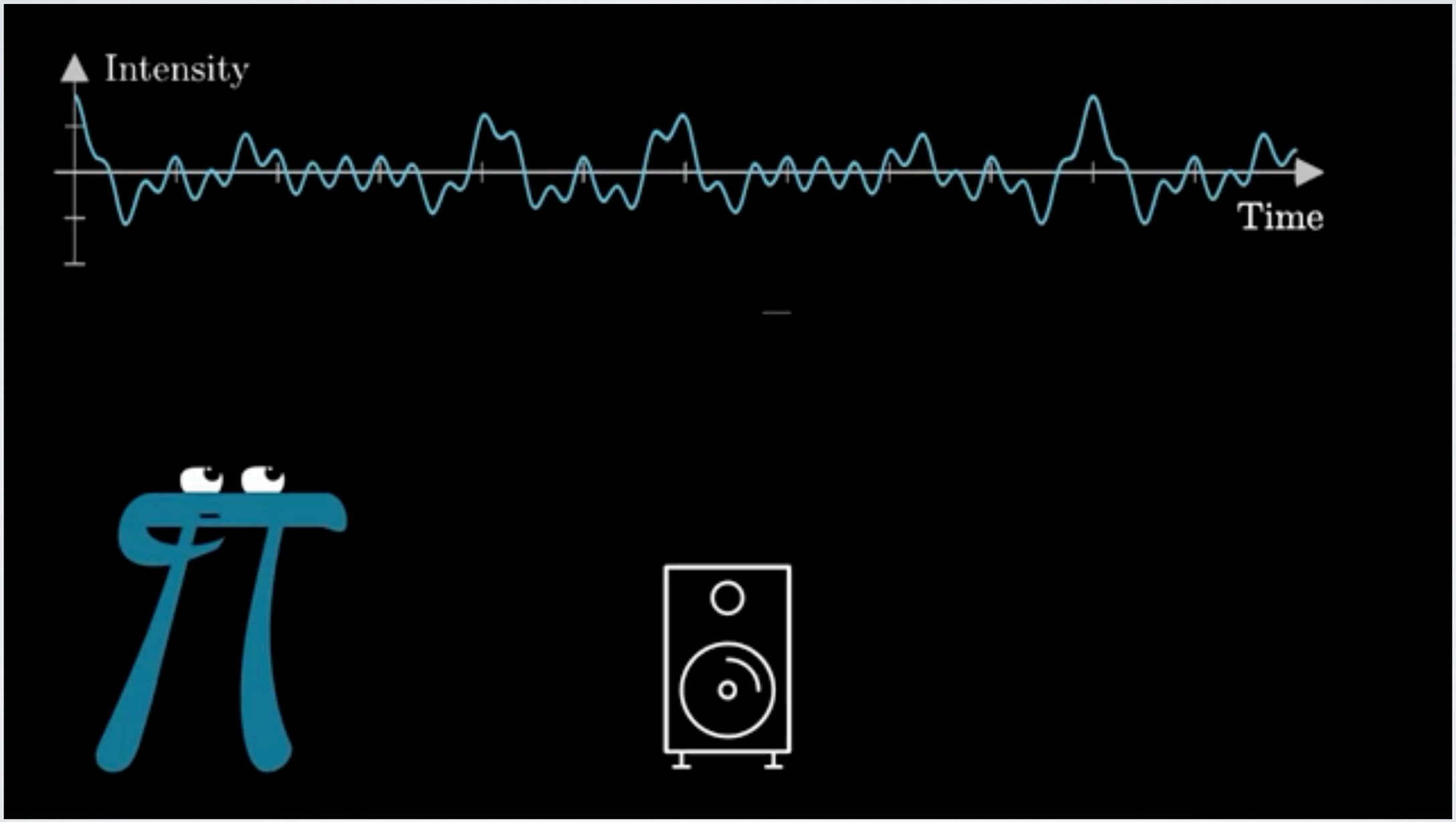
youtube.com/watch?v=r6sGWTCMz2k



Fourier Transform

Fourier Transforms

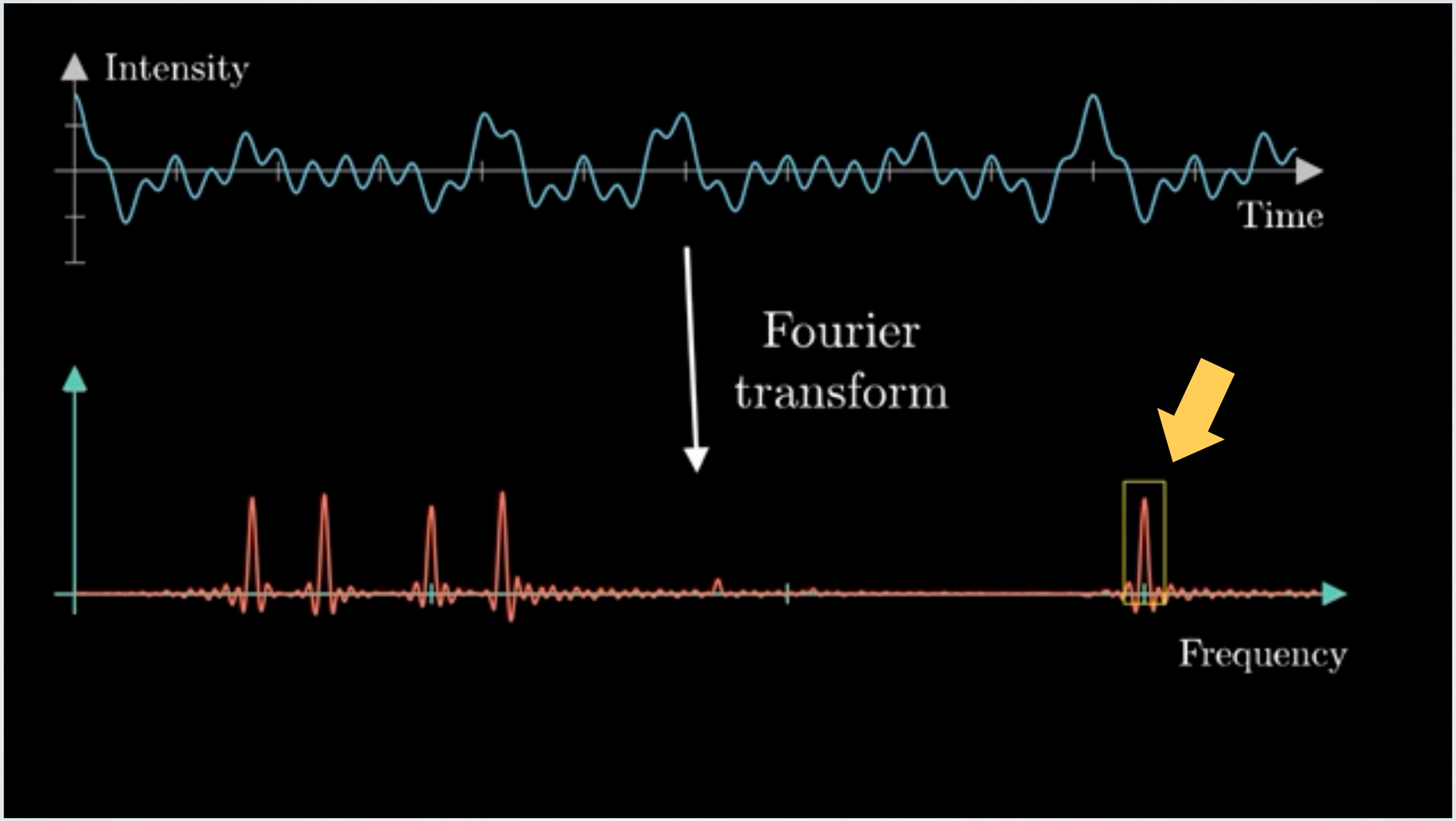
- A visualization of Fourier transforms.



youtube.com/watch?v=spUNpyF58BY

Fourier Transforms and Filtering

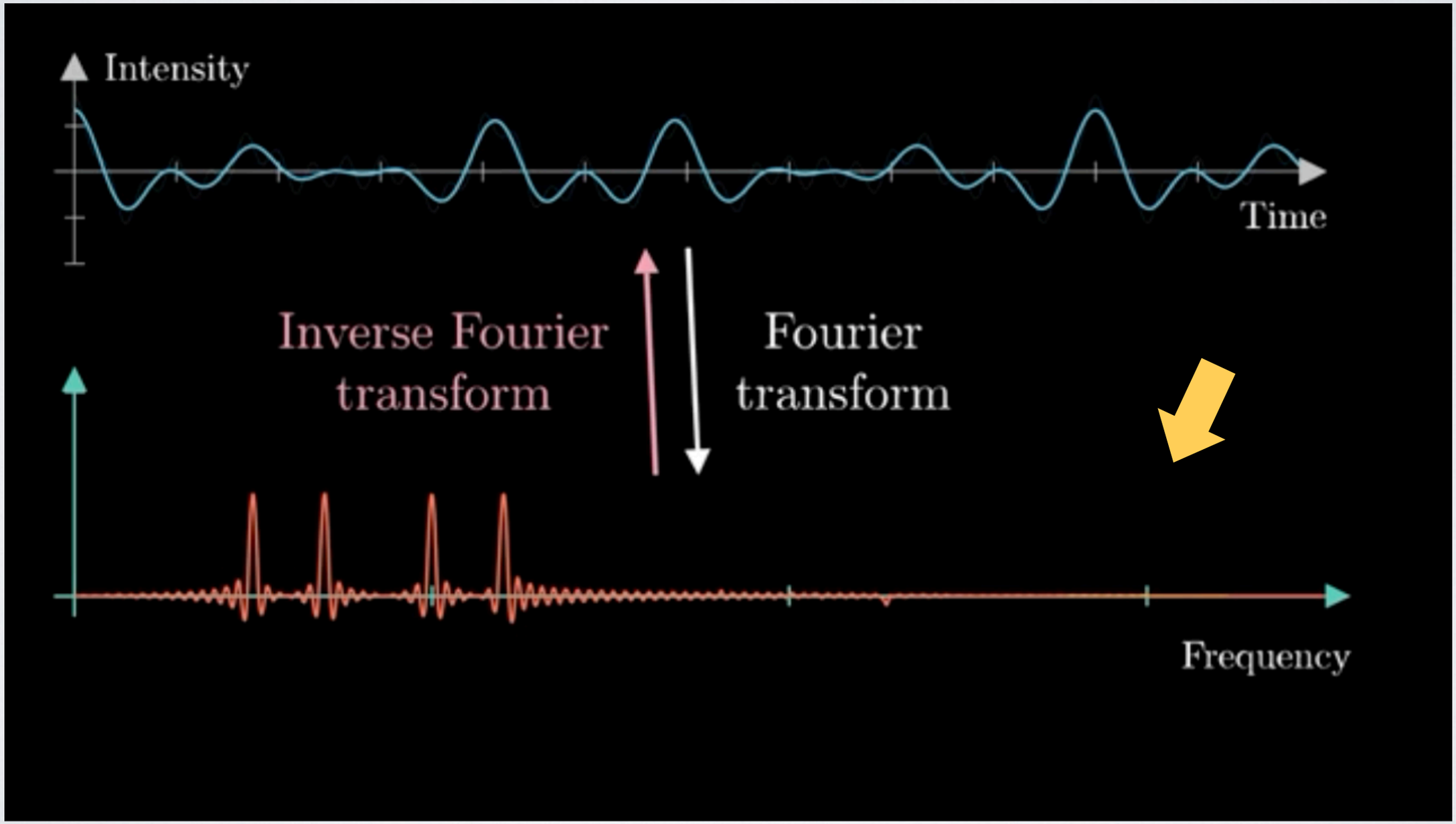
- A visualization of Fourier transforms and filtering.



youtube.com/watch?v=spUNpyF58BY

Fourier Transforms and Filtering

- A visualization of Fourier transforms and filtering.



youtube.com/watch?v=spUNpyF58BY