FFTs in Graphics and Vision

Michael Kazhdan

(600.660)

What are we studying?

- Signal Processing
- Representation Theory
- Alignment
- Symmetry Detection

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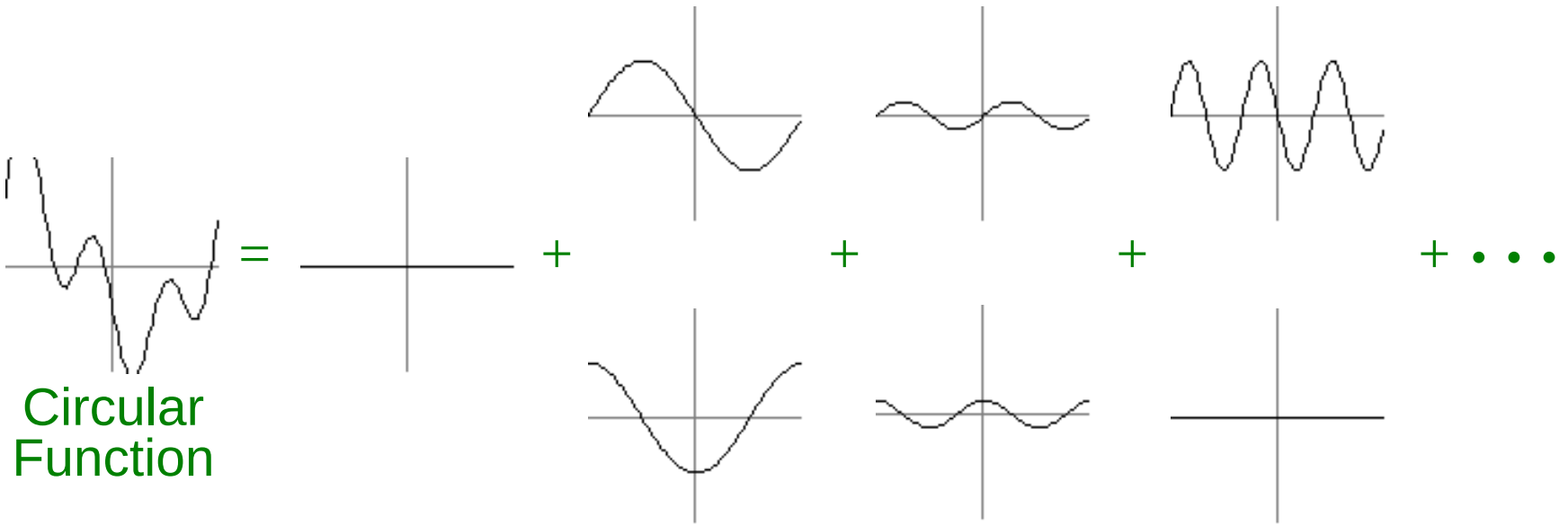

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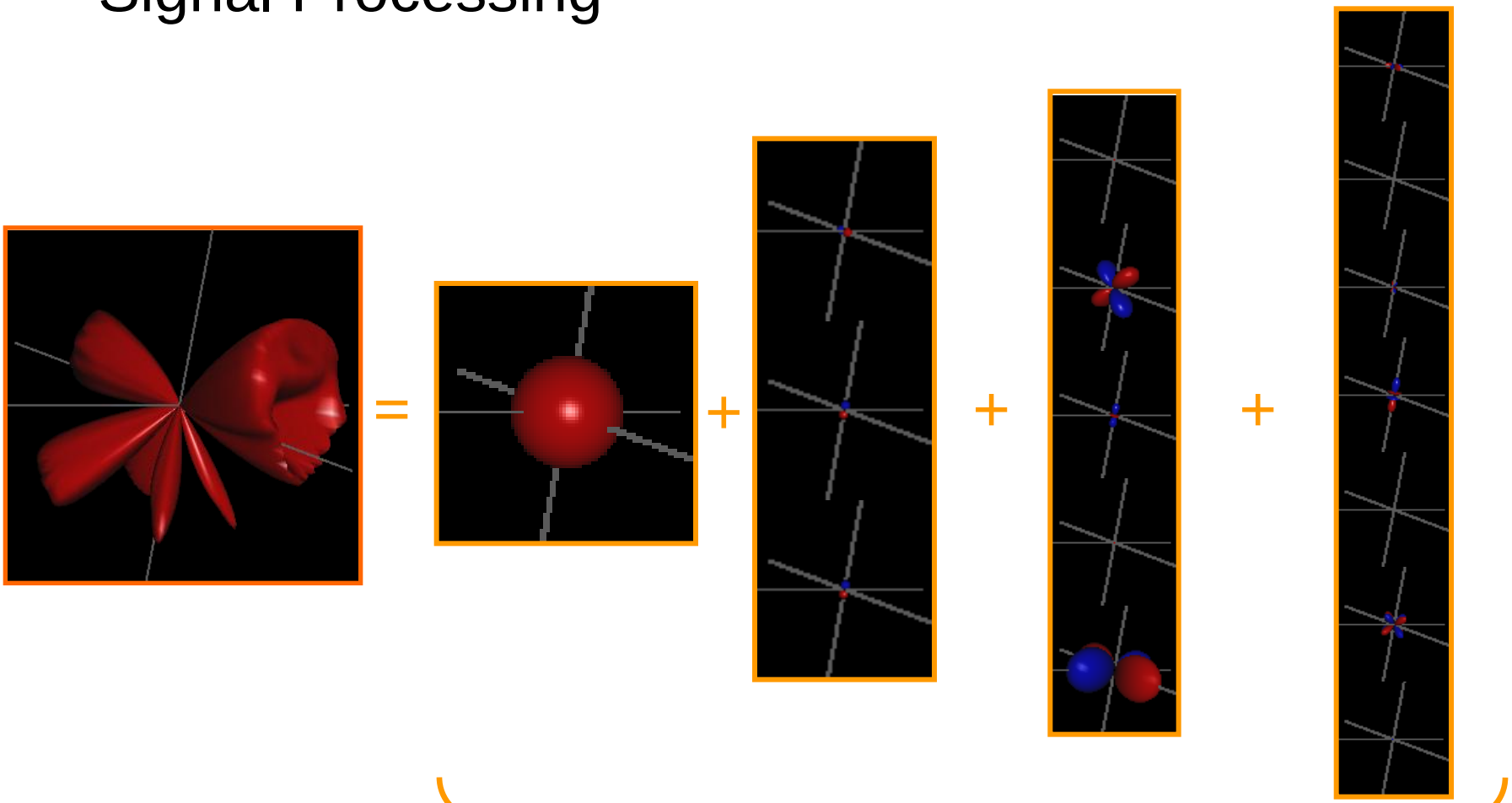

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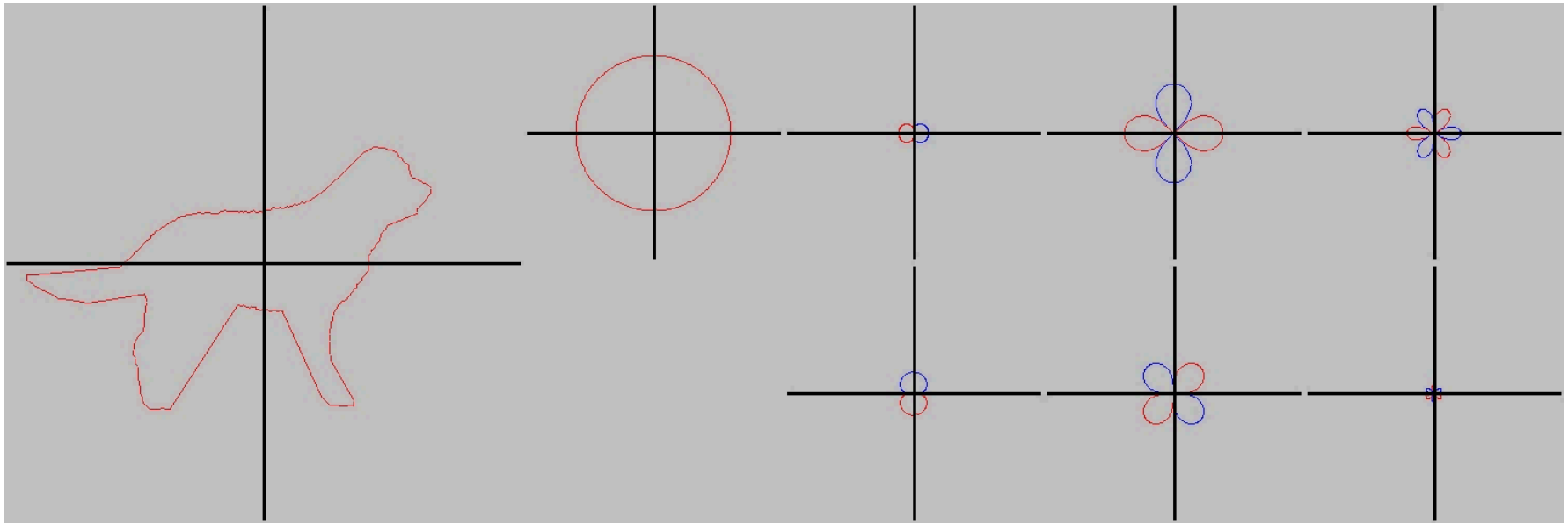

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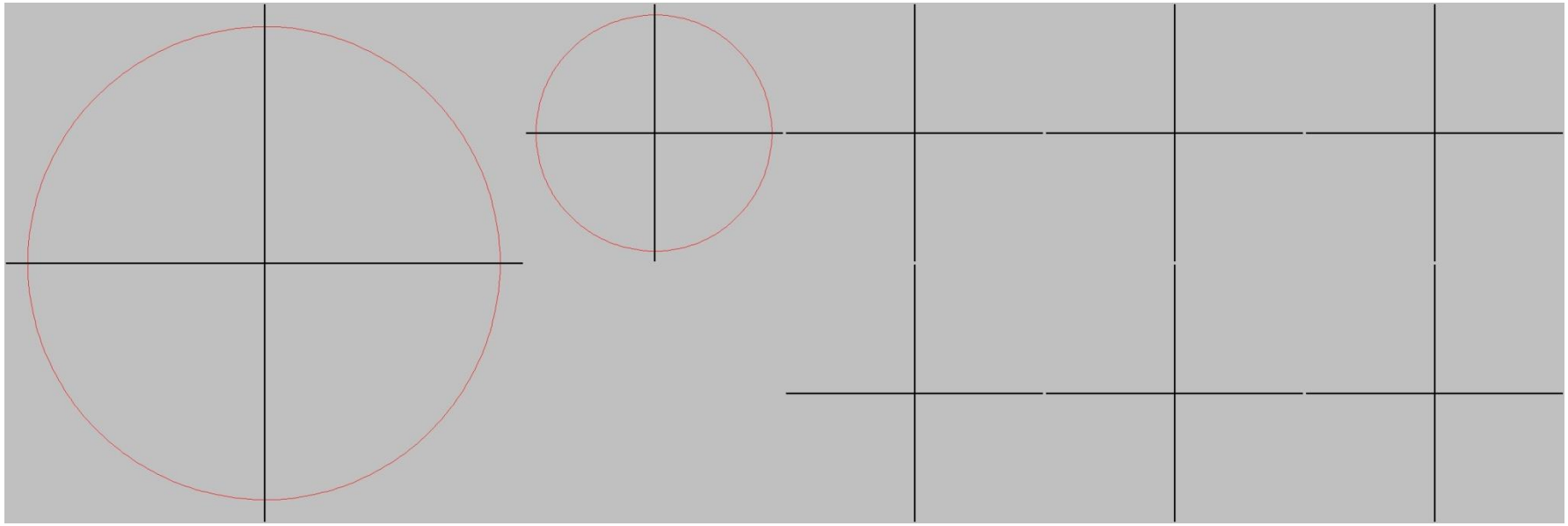

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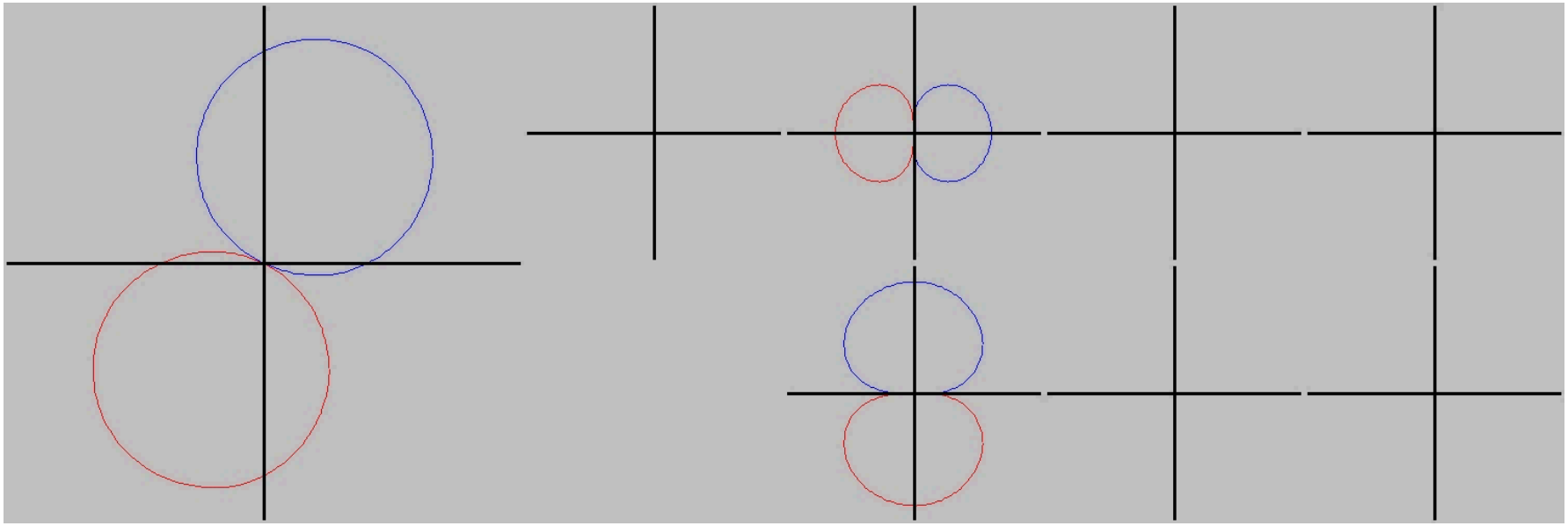

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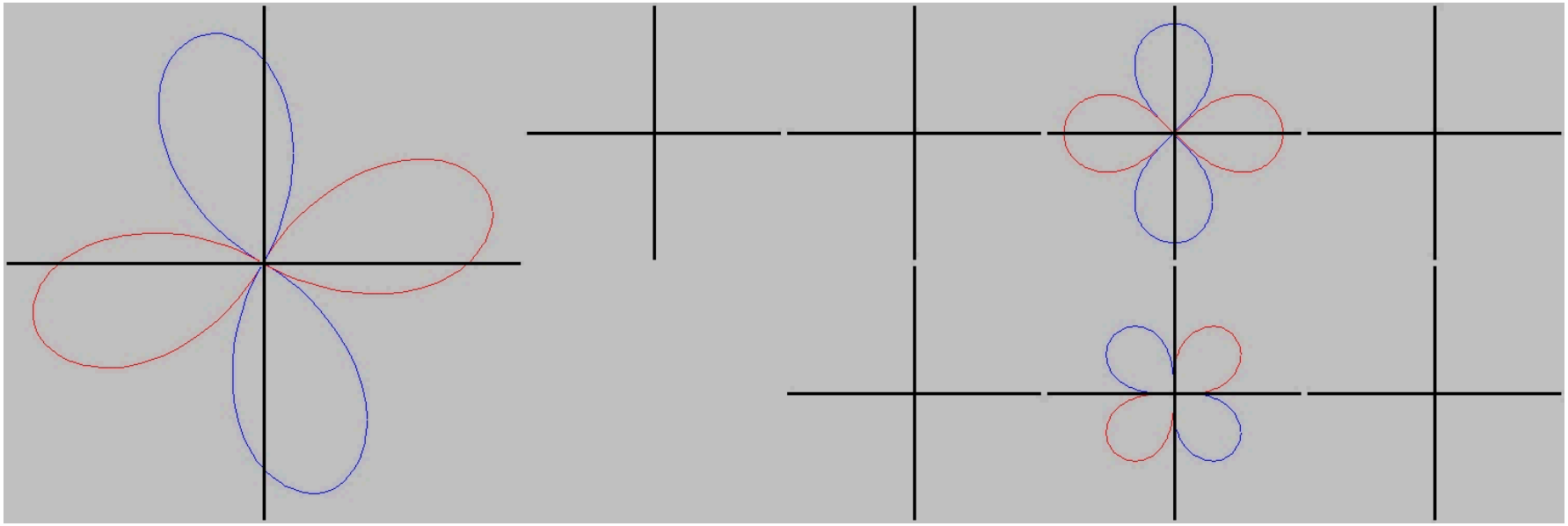

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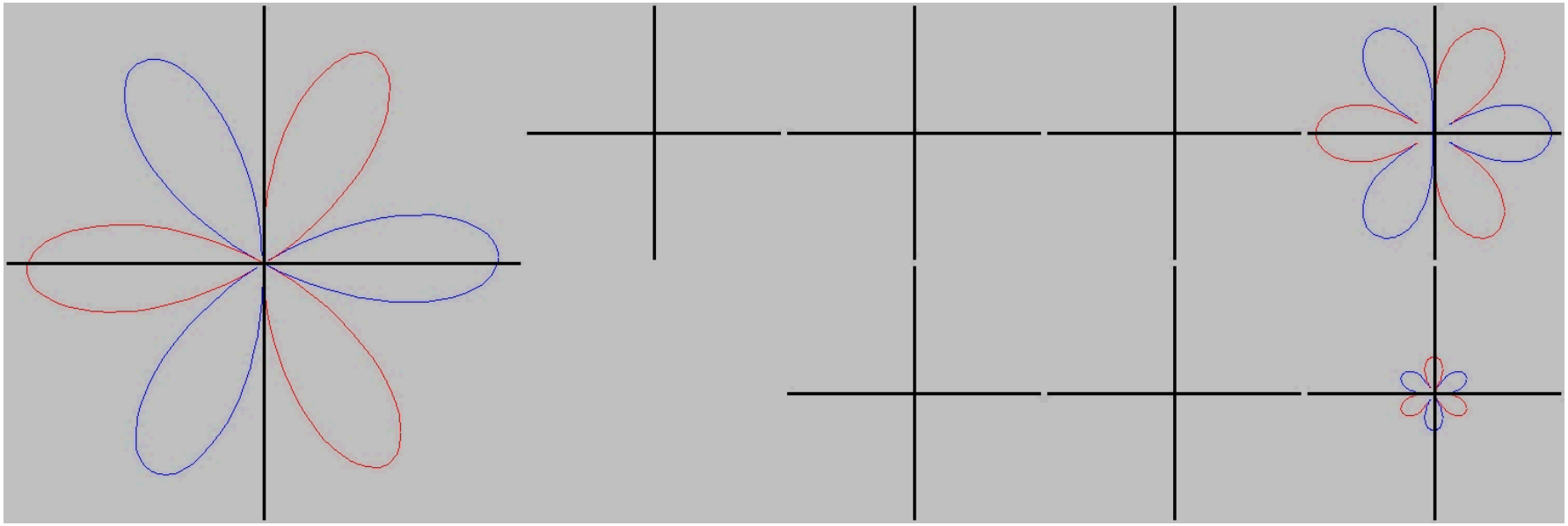

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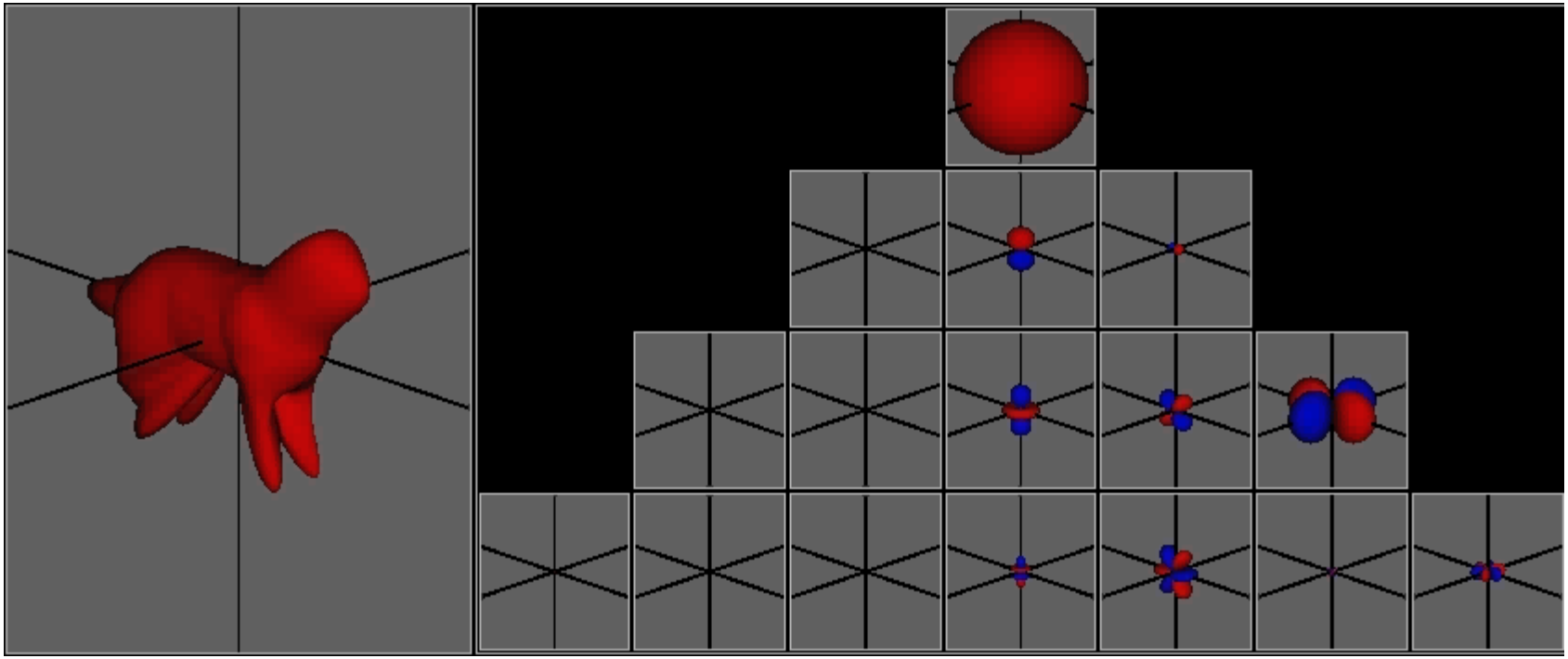

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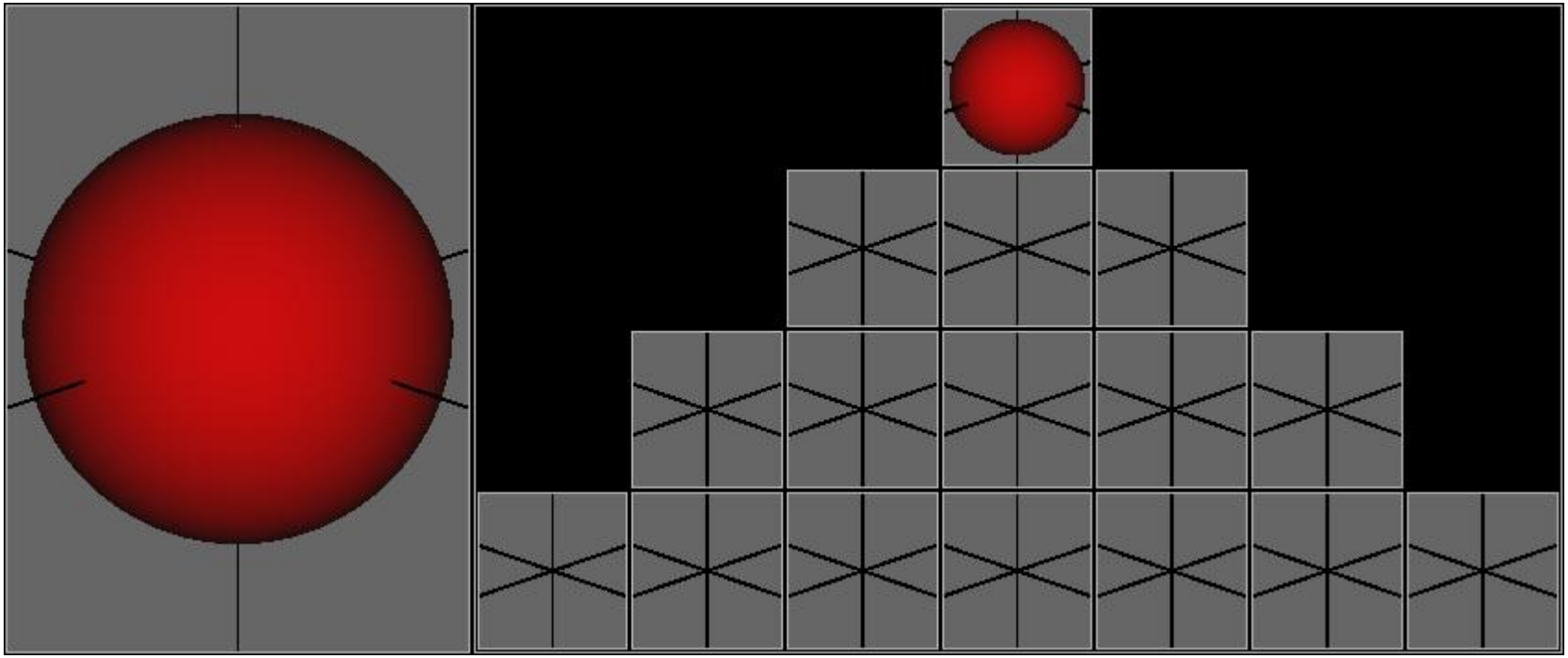

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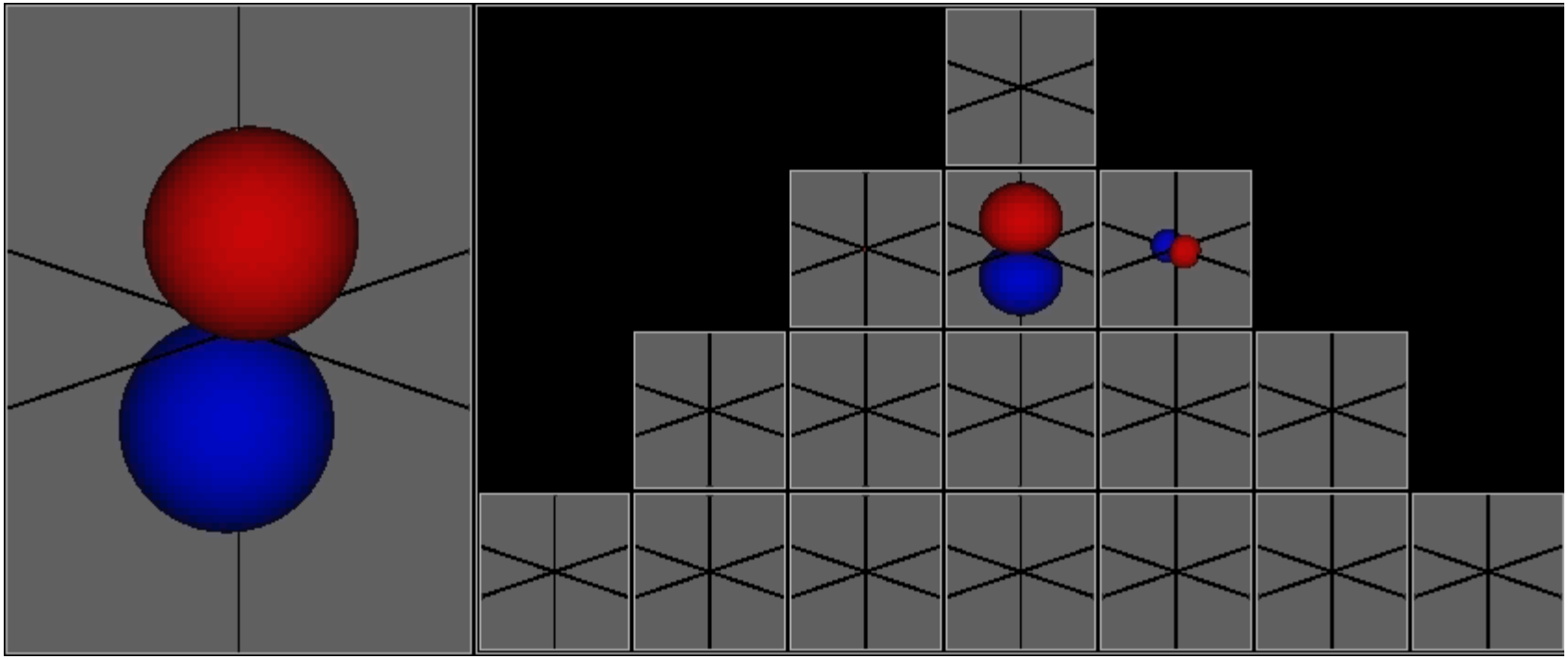

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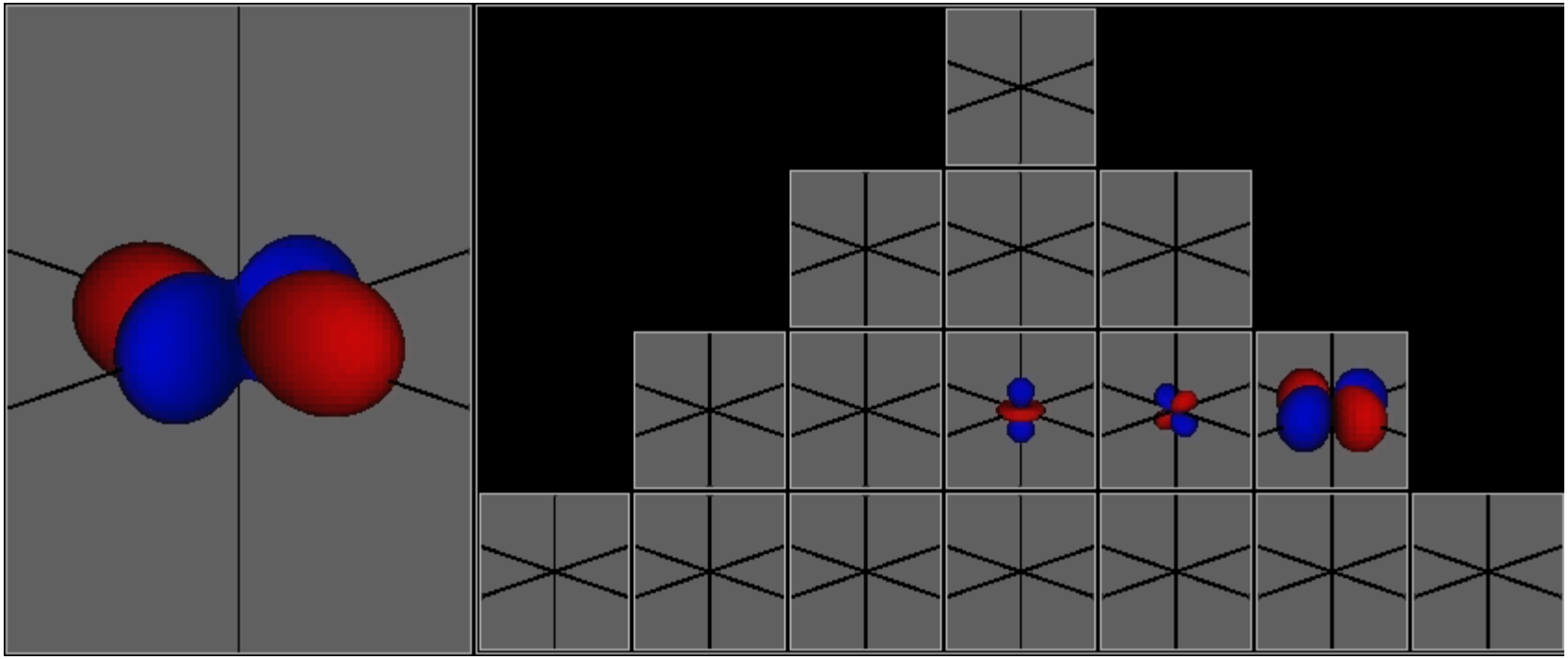

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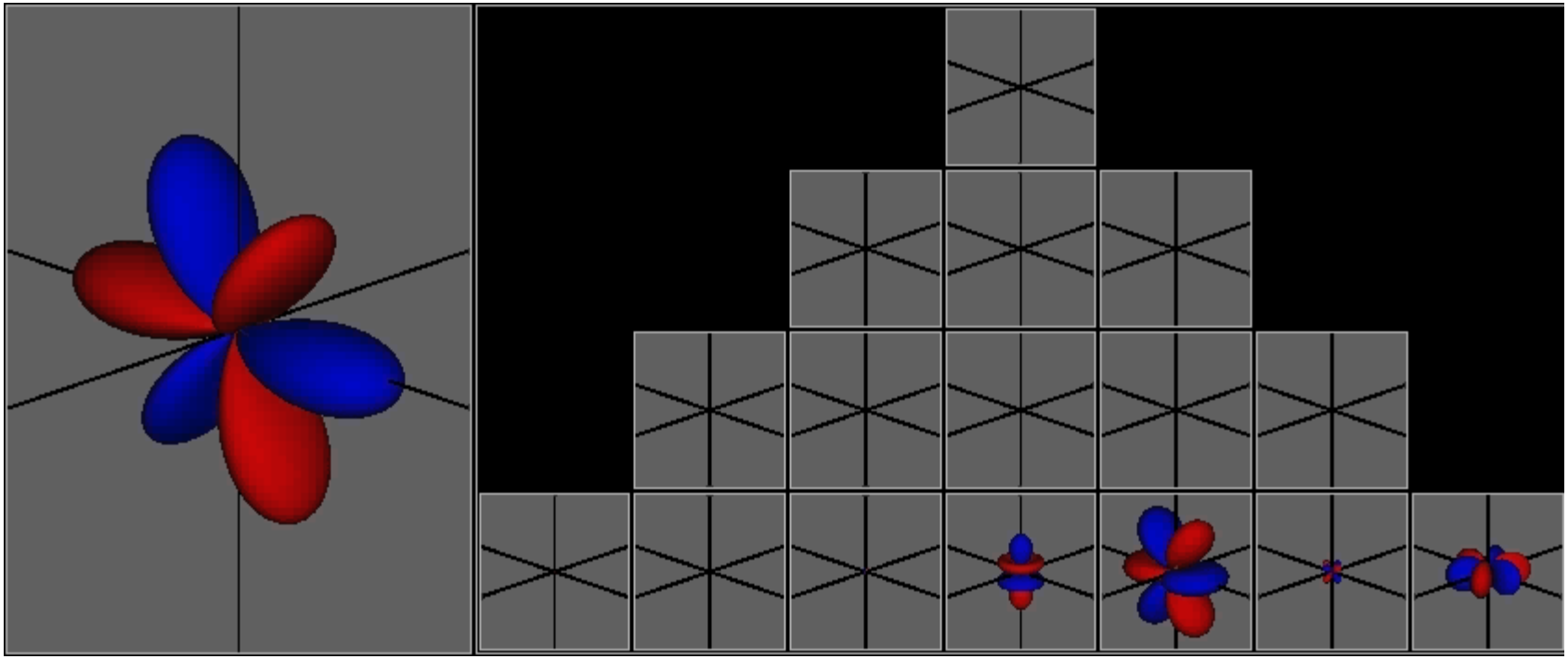

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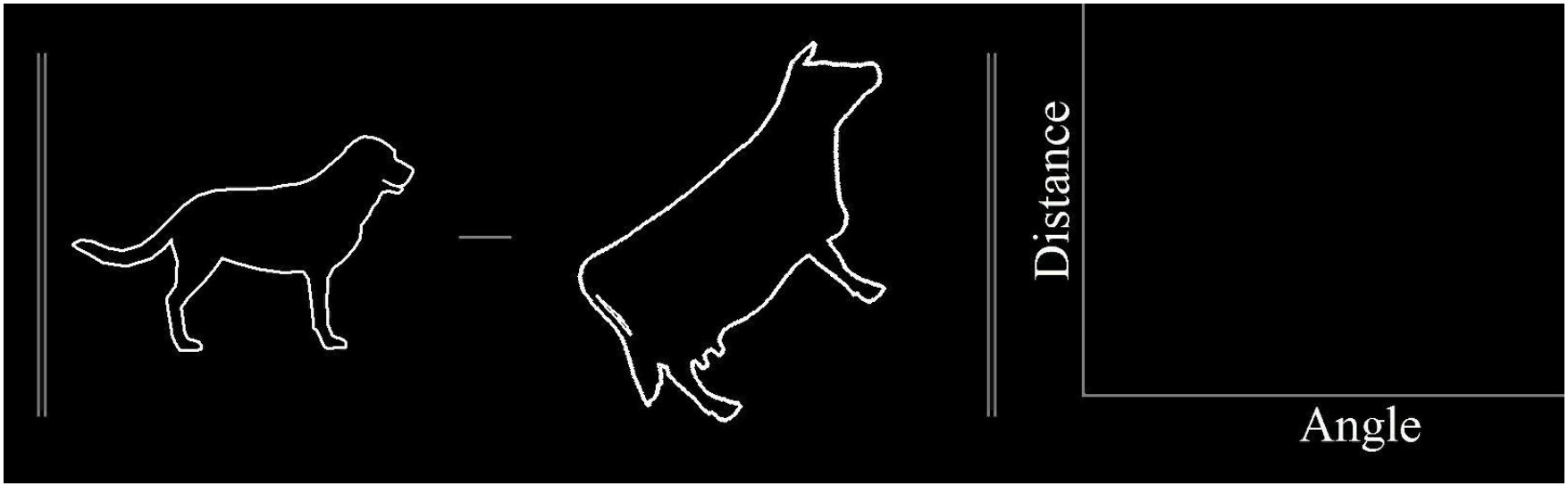

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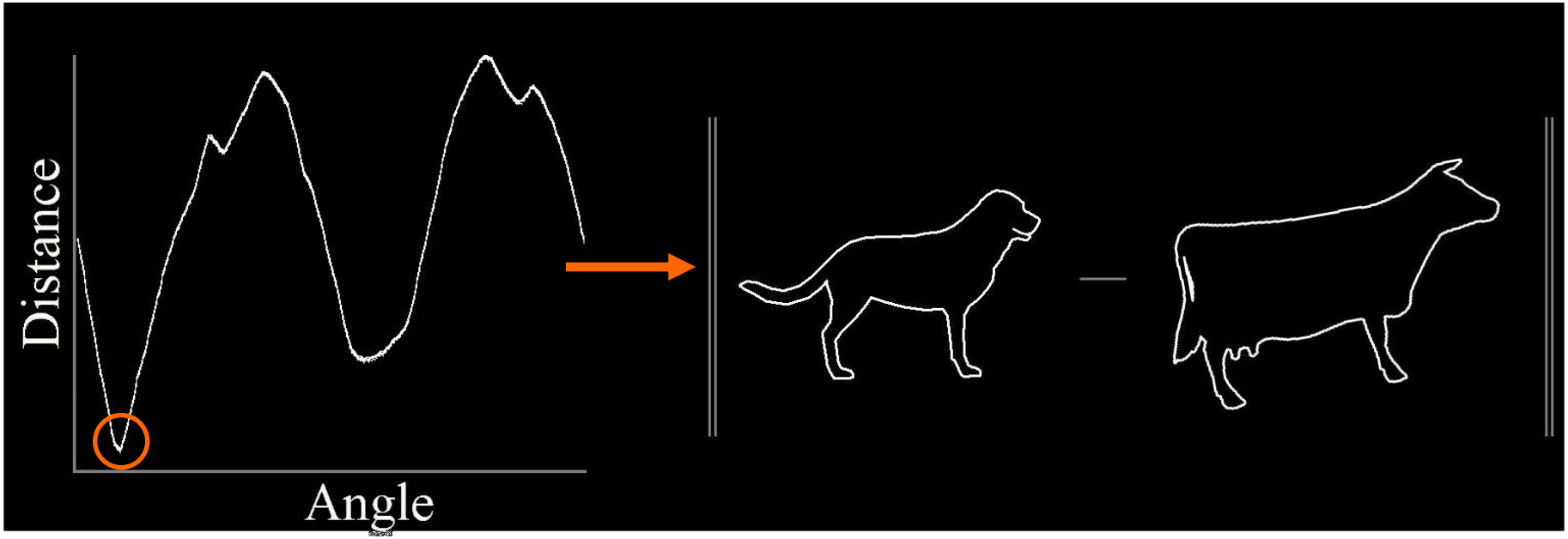

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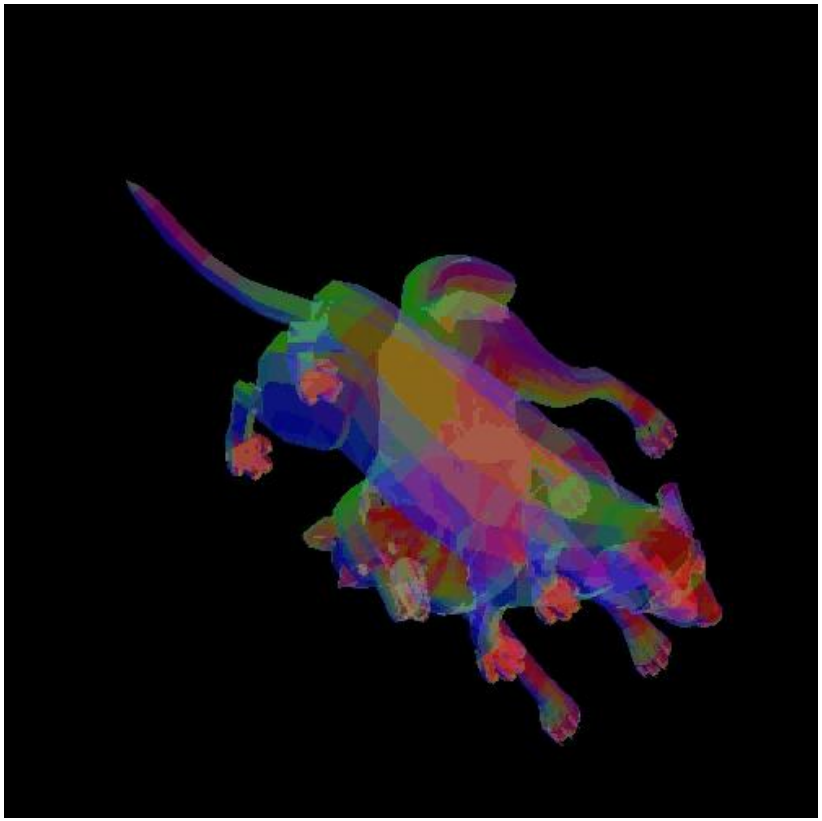

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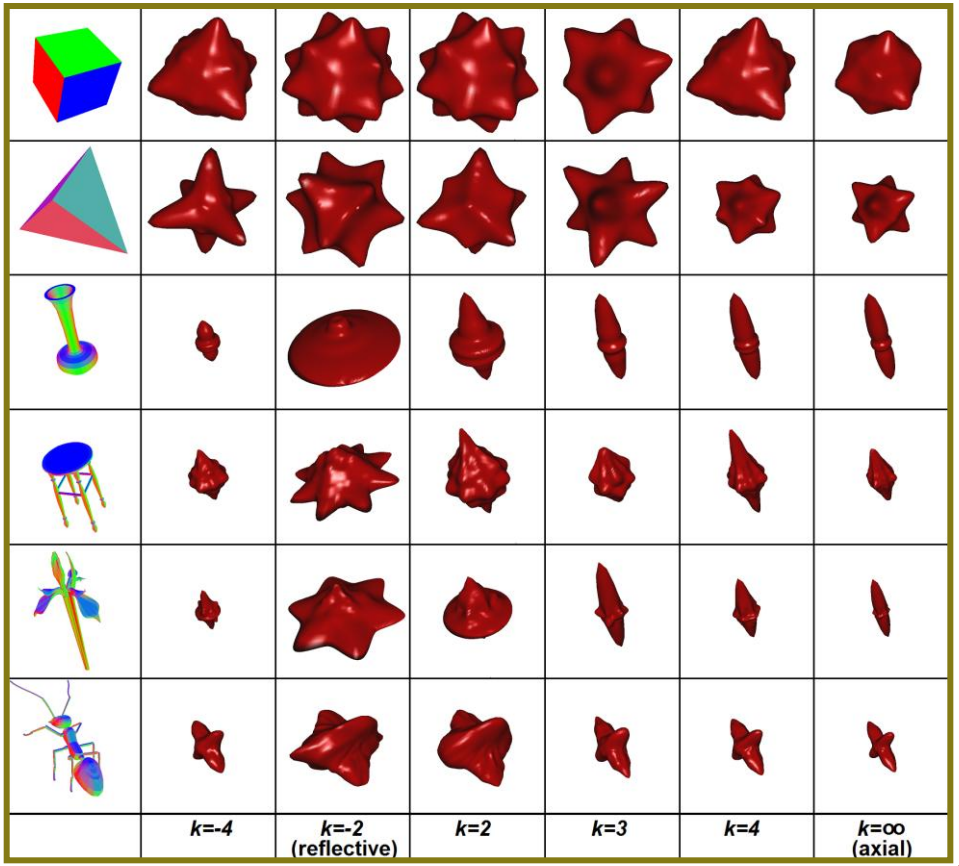

What We Will Cover

- Some basic algebra
  - Representation Theory
  - Commutative Groups
    - » Schur's Lemma
- Signals on a circle / torus
  - Fourier Transform
  - Convolution/Correlation
    - » Smoothing, Differentiation, etc.
- Signals on a sphere
  - Spherical Harmonic Transform
  - Wigner-D Transform
  - Convolution/Correlation
    - » Smoothing, Differentiation, etc.

What I Expect of You

Homework:

- A code-base will be provided.
- Assignments will focus on implementation.
- Doing the homework assignments is how you will learn!

Presentations:

- There will be no student presentation in the course.

Exams:

- There will be no exams.

Readings:

- There is no text book.
- Class notes will be posted.
- Supplementary readings will be suggested.

Miscellany

Class Cancellation:

- No class on Wednesday, October 1st.
- No class on Monday, October 6th.