Harmonic Analysis

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Outline

1. Fourier Series of a periodic function. Fejer kernel. Convergence Properties.

2. Convolution and Fourier Series. Heat Equation. Diagonalization of convolution operators.

3. Fourier Transforms on R^d.

4. Multipliers and singular integral operators. Interpolation.

5. Sobolev Spaces, Applications to PDE and ΨDE.

6. Theorems of Paley-Wiener and Wiener.

7. Hardy Spaces. Prediction.

8. Compact Groups. Peter-Weyl Theorem.

Here are thge list of books on the reserved list at CIMS Library. There is no preferred textbook.

1. Boerner
   Representations of groups;

2. Dym and McKean
   Fourier series and integrals

3. Munroe   Introduction to measure and integration

4. Sommerfeld
   Partial differential equations in physics

5. Stein
   Introduction to Fourier analysis on Euclidean spaces

6. Stein
   Singular integrals and differentiability properties of functions