

# Fourier Analysis

Hui Sun

January 25, 2025

# Contents

<b>1</b>	<b>The Genesis of Fourier Analysis</b>	<b>3</b>
1.1	The vibrating string . . . . .	3

## Chapter 1

# The Gensis of Fourier Analysis

In this chapter, we will motivate the study of Fourier analysis: explaining the roles of  $\cos t$ ,  $\sin t$ ,  $e^{it}$ , learning about the motion of vibrating string, finding its solution, and finally, studying heat diffusion. (The aim of this chapter is to motivate more rigorous study of Fourier analysis in later chapters, feel free to skip to Chapter 2.)

### 1.1 The vibrating string