Convergence and summability of cardinal sine series

B. A. Bailey and W. R. Madych

Abstract

We consider a class of summability methods for the classical cardinal sine series that are related to the Bernstein-Boas representation of entire functions of exponential type less than \( \pi \). We provide conditions that ensure regularity of the methods, prove a Tauberian type theorem, and give an example of a function in the Bernstein class \( B_\pi \) whose samples do not give rise to a convergent cardinal sine series and are not summable via the methods that are considered here.

Keywords: Bernstein class, cardinal series, sampling theory, summability.

MSC: 30B99, 30D10, 40A30, 40G99, 41A05, 94A20.

§1. Introduction

1.1. Extended abstract

The classical cardinal sine series with coefficients \( \{c_n\}_{n=-\infty}^{\infty} \) is defined by

\[
\sum_{n=-\infty}^{\infty} c_n \frac{\sin \pi (z - n)}{\pi (z - n)},
\]

(1.1)