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<<实Hp空间四讲>>

图书基本信息

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前言

It is well known that the study on Hp spaces has been going on for a long period. The classical Hp spaces on the unit circle or upper half-plane are defined by the aid of complex method. The theory of these spaces plays an important role in the study of the classical Fourier analysis. It is natural to extend the definitions of these spaces to higher dimensional case along with the development of the Fourier analysis on Euclidean spaces. The first work on this was done by E. M. Stein and G. Weiss. The definition and theory of the n-dimensional Hp spaces that they established in the early days of the sixties are based on the method of harmonic functions instead of the complex method. However, the most important step in the development of Hp spaces is that the real variable theory of Hp spaces was found by virtue of the method of maximal functions in the early days of the seventies. The purpose of this book is to introduce the real variable theory of Hp spaces in short and pay more attention to its applications to some respects in analysis fields. The whole book consists of four chapters. The basic theory of FeffermanStein on real Hp spaces is briefly introduced in Chapter 1. The contents in Chapter 2 involve the atomic decomposition theory and the molecular decomposition theory of real Hp spaces. In addition, the dual spaces of real Hp spaces, the interpolation of operators in Hp spaces, and the interpolation of Hp spaces are also discussed in Chapter 2 as a prerequisite for Chapters 3 and 4. The properties of several basic operators in Hp spaces will be discussed in Chapter 3 in detail. Among them, some basic results are contributed by Chinese mathematicians, such as the decomposition theory of weak Hp spaces and its applications to the study on the sharpness of singular integrals, a new method to deal with the elliptic Riesz means in Hp spaces, and the transference theorem of Hp multipliers, etc. The last chapter is devoted to applications of real Hp spaces to approximation theory. The materials in Chapter 4 are fully contributed by Chinese mathematicians.

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内容概要

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