Preface

Hilbert-type inequalities including Hilbert's inequalities, Hardy-Hilbert-type inequalities and Yang-Hilbert-type inequalities are important in analysis and its applications, which are mainly divided into three classes of integral, discrete and half-discrete. In the last twenty years, there have been many advances in research on Hilbert-type inequalities, especially in Yang-Hilbert-type inequalities.

In this book, applying the weight functions, the transfer formula, the parameterized idea and the technique of real analysis and functional analysis, we introduce multi-parameters and provide three kinds of multidimensional Hilbert-type inequalities with the general nonnegative measurable kernels and the best possible constant factors related to the Gamma function. The equivalent forms, the reverses and some Hardy-type inequalities are obtained. Furthermore, we consider the operator expressions with the norm, some particular inequalities and a large number of examples. The theory of multidimensional Hilbert-type inequalities and the operator expressions are built in this book. The lemmas and theorems provide an extensive account of these kinds of inequalities and operators.

There are four chapters in this book. In Chapter 1, we introduce some recent developments of Hilbert-type integral, discrete and half-discrete inequalities. In Chapter 2, by using the transfer formula, some useful lemmas are deduced, and the theory of multidimensional Hilbert-type

integral inequalities and the operator expressions is stated. In Chapter 3, by using Hermite-Hadamard's inequality, the theory of multidimensional discrete Hilbert-type inequalities and applications are built. In Chapter 4, summing up of the methods in Chapter 2 and Chapter 3, the theory of multidimensional half-discrete Hilbert-type inequalities and applications are also considered.

The intended readership is the graduate students of mathematics, the scholars of Mathematics and the pure and applied mathematicians.

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