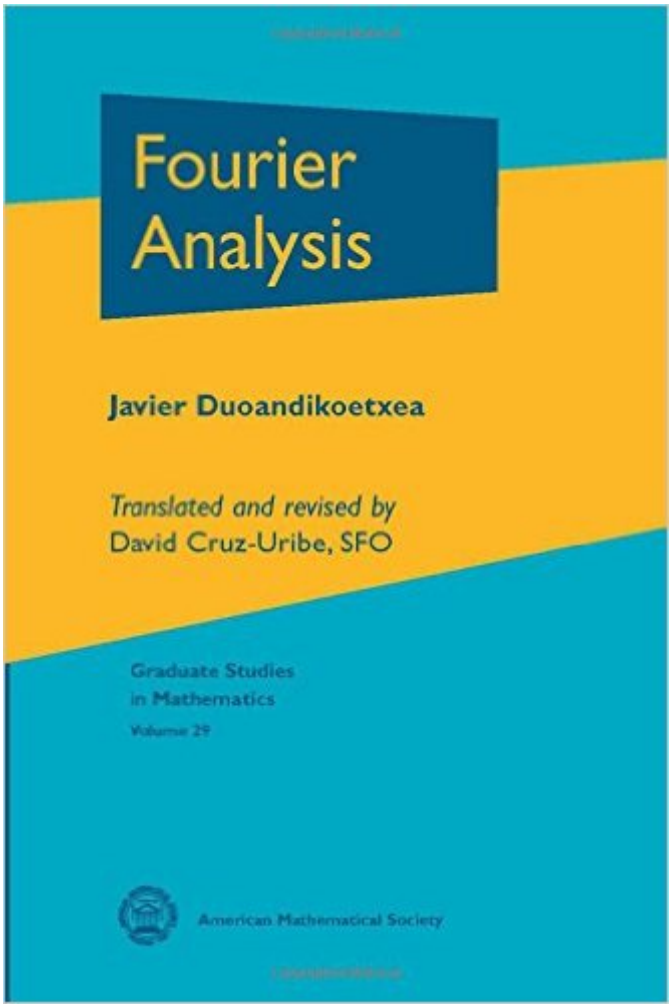
Fourier Analysis (Graduate Studies In Mathematics)



Synopsis

Fourier analysis encompasses a variety of perspectives and techniques. This volume presents the real variable methods of Fourier analysis introduced by CalderÃ n and Zygmund. The text was born from a graduate course taught at the Universidad AutÃ noma de Madrid and incorporates lecture notes from a course taught by JosÃ© Luis Rubio de Francia at the same university. Motivated by the study of Fourier series and integrals, classical topics are introduced, such as the Hardy-Littlewood maximal function and the Hilbert transform. The remaining portions of the text are devoted to the study of singular integral operators and multipliers. Both classical aspects of the theory and more recent developments, such as weighted inequalities, H^1, BMO spaces, and the $T1$ theorem, are discussed. Chapter 1 presents a review of Fourier series and integrals; Chapters 2 and 3 introduce two operators that are basic to the field: the Hardy-Littlewood maximal function and the Hilbert transform. Chapters 4 and 5 discuss singular integrals, including modern generalizations. Chapter 6 studies the relationship between H^1, BMO, and singular integrals; Chapter 7 presents the elementary theory of weighted norm inequalities. Chapter 8 discusses Littlewood-Paley theory, which had developments that resulted in a number of applications. The final chapter concludes with an important result, the $T1$ theorem, which has been of crucial importance in the field. This volume has been updated and translated from the Spanish edition that was published in 1995. Minor changes have been made to the core of the book; however, the sections, "Notes and Further Results" have been considerably expanded and incorporate new topics, results, and references. It is geared toward graduate students seeking a concise introduction to the main aspects of the classical theory of singular operators and multipliers. Prerequisites include basic knowledge in Lebesgue integrals and functional analysis.

Book Information

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Customer Reviews

This book is just what I expected it to be. It is a very concise and clear introduction to Fourier Analysis.

I am reading this book for further study following a reading course I took with a Dr. Mikhail Vishik, who recommended me the book, in the fall of 2013.The development is very terse, but a course in generalized functions (distributions) - in my experience, from Rudin's Functional Analysis, chapters 6 and 7 - should prepare the reader both so that he may read the book competently and that he may gain a philosophical appreciation for it. Those familiar with the Princeton series on analysis by Stein & Shakarchi also may enjoy some nostalgia in reading Duoandikoetxea.The book "emphasizes the real variable methods developed by Calderon and Zygmund", so other beautiful results like the distributional Paley-Wiener theorems are absent.

Fourier Analysis with Applications to Boundary Value Problems A First Course in Fourier Analysis