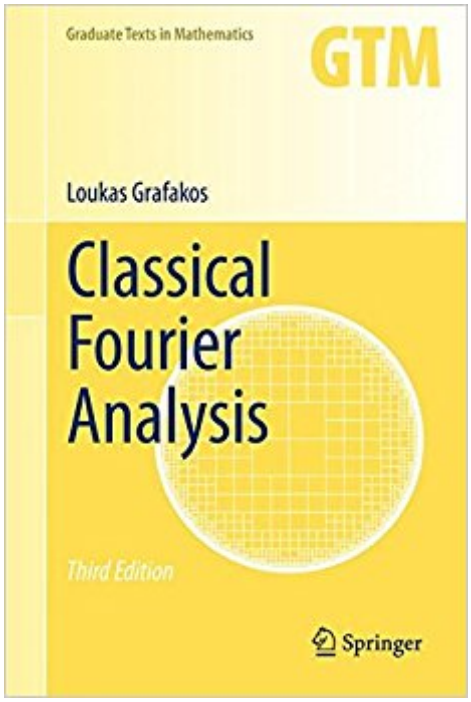
Classical Fourier Analysis (Graduate Texts In Mathematics)



Synopsis

The main goal of this text is to present the theoretical foundation of the field of Fourier analysis on Euclidean spaces. It covers classical topics such as interpolation, Fourier series, the Fourier transform, maximal functions, singular integrals, and LittlewoodÃ¢â ¬â œPaley theory. The primary readership is intended to be graduate students in mathematics with the prerequisite including satisfactory completion of courses in real and complex variables. The coverage of topics and exposition style are designed to leave no gaps in understanding and stimulate further study.This third edition includes new Sections 3.5, 4.4, 4.5 as well as a new chapter on Ã¢â ¬Å“Weighted Inequalities,Ã¢â ¬Â• which has been moved from GTM 250, 2nd Edition. Appendices I and B.9 are also new to this edition. Countless corrections and improvements have been made to the material from the second edition. Additions and improvements include: more examples and applications, new and more relevant hints for the existing exercises, new exercises, and improved references.

Book Information

Series: Graduate Texts in Mathematics (Book 249)

Hardcover: 638 pages

Publisher: Springer; 3rd ed. 2014 edition (November 19, 2014)

Language: English

ISBN-10: 1493911937

ISBN-13: 978-1493911936

Product Dimensions: 6.1 x 1.4 x 9.2 inches

Shipping Weight: 2.4 pounds (View shipping rates and policies)

Average Customer Review: 5.0 out of 5 stars 1 customer review

Best Sellers Rank: #928,085 in Books (See Top 100 in Books) #59 inÃ Â Books > Science & Math > Mathematics > Infinity #189 inÃ Â Books > Science & Math > Mathematics > Pure Mathematics > Functional Analysis #782 inÃ Â Books > Science & Math > Mathematics > Mathematical Analysis

Customer Reviews

Ã¢â ¬Å“The most up-to-date account of the most important developments in the area. Ã¢â ¬Â¦ It has to be pointed out that the hard ones usually come with a good hint, which makes the book suitable for self-study, especially for more motivated students. That being said, the book provides a good reference point for seasoned researchers as wellÃ¢â ¬Â• (Atanas G. Stefanov, Mathematical Reviews, August, 2015)

The main goal of this text is to present the theoretical foundation of the field of Fourier analysis on Euclidean spaces. It covers classical topics such as interpolation, Fourier series, the Fourier transform, maximal functions, singular integrals, and LittlewoodÃ¢â ¬â œPaley theory. The primary readership is intended to be graduate students in mathematics with the prerequisite including satisfactory completion of courses in real and complex variables. The coverage of topics and exposition style are designed to leave no gaps in understanding and stimulate further study.This third edition includes new Sections 3.5, 4.4, 4.5 as well as a new chapter on Ã¢â ¬Å“Weighted Inequalities,Ã¢â ¬Â• which has been moved from GTM 250, 2nd Edition.Ã Â Appendices I and B.9 are also new to this edition.Ã Â Countless corrections and improvements have been made to the material from the second edition. Additions and improvements include: more examples and applications, new and more relevant hints for the existing exercises, new exercises, and improved references.Reviews from the Second Edition:Ã¢â ¬Å“The books cover a large amount of mathematics. They are certainly a valuable and useful addition to the existing literature and can serve as textbooks or as reference books. Students will especially appreciate the extensive collection of exercises.Ã¢â ¬Â•Ã¢â ¬â ¢Andreas Seager, Mathematical ReviewsÃ¢â ¬Å“This book is very interesting and useful. It is not only a good textbook, but also an indispensable and valuable reference for researchers who are working on analysis and partial differential equations. The readers will certainly benefit a lot from the detailed proofs and the numerous exercises.Ã¢â ¬Â•Ã¢â ¬â ¢Yang Dachun, zbMATH

This book works out many calculations that are seldom given and usually brushed off as routine calculations: things like spherical surface measure in n-dimensions, integrals involving Bessel functions, formulas for derivatives and Fourier transforms of tempered distributions, or properties of the Riesz transform. These are routine once you are familiar with them, but even then they take time and careful attention when doing changes of variables, and it is nice to have this calculations worked out. Usually when I do any calculation involving spherical surface measure I will check Grafakos.Aside from the fundamental material on the Fourier transform of Schwartz functions and of tempered distributions, the Riesz-Thorin interpolation theorem, and Fourier analysis on the n-dimensional torus, there is a good chapter on singular integral operators. There are in fact few books that present singular integral operators, and as an introduction to this topic Grafakos is better than Stein’s "Singular Integrals and Differentiability Properties of Functions" and Muscalu and Schlag’s "Classical and Multilinear Harmonic Analysis". There is a chapter on Littlewood-Paley

theory. Sobolev spaces do not appear in this volume, but do appear in the next volume, "Modern Fourier Analysis", which also covers Besov spaces, which is a rare treat.Grafakos doesn't cover harmonic analysis on spheres, where words like the spherical Laplacian and solid spherical harmonics appear. Probably this is best fitted into the theory of Lie groups and homogeneous spaces, because the sphere in R^n is a homogeneous space and is not a locally compact abelian group.

Classical Fourier Analysis (Graduate Texts in Mathematics) Modern Fourier Analysis (Graduate Texts in Mathematics) Fourier Analysis (Graduate Studies in Mathematics) Matrix Analysis (Graduate Texts in Mathematics) Fourier Analysis and Its Applications (Pure and Applied Undergraduate Texts) Random Fourier Series with Applications to Harmonic Analysis. (AM-101), Volume 101 (Annals of Mathematics Studies) Fourier Analysis on Groups (Dover Books on Mathematics) Principles of Fourier Analysis, Second Edition (Textbooks in Mathematics) Fourier Analysis: An Introduction (Princeton Lectures in Analysis) Graph Theory (Graduate Texts in Mathematics) Algebraic Graph Theory (Graduate Texts in Mathematics) Matroid Theory (Oxford Graduate Texts in Mathematics) Modern Geometry Ã¢â ¬â ¢ Methods and Applications: Part I: The Geometry of Surfaces, Transformation Groups, and Fields (Graduate Texts in Mathematics) (Pt. 1) Functions of One Complex Variable II (Graduate Texts in Mathematics, Vol. 159) Riemann Surfaces (Oxford Graduate Texts in Mathematics) Commutative Algebra: with a View Toward Algebraic Geometry (Graduate Texts in Mathematics) The Arithmetic of Elliptic Curves (Graduate Texts in Mathematics) Differential Geometry: Connections, Curvature, and Characteristic Classes (Graduate Texts in Mathematics) Algebraic Geometry (Graduate Texts in Mathematics) Categories for the Working Mathematician (Graduate Texts in Mathematics)