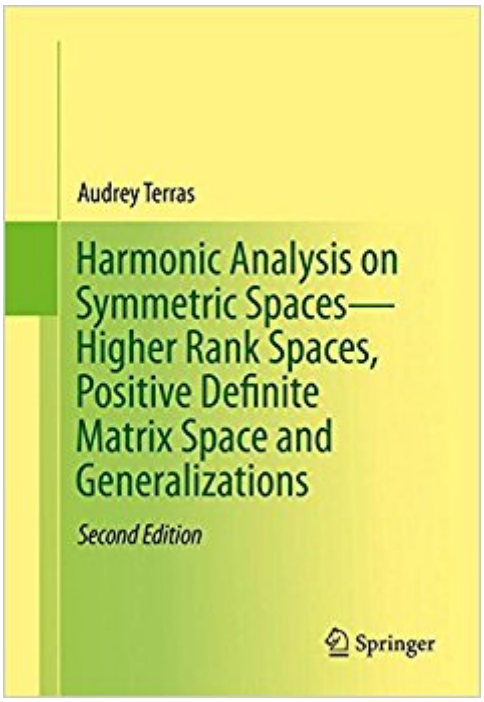
Harmonic Analysis On Symmetric SpacesÃ¢â‚¬â€Higher Rank Spaces, Positive Definite Matrix Space And Generalizations



Synopsis

This text is an introduction to harmonic analysis on symmetric spaces, focusing on advanced topics such as higher rank spaces, positive definite matrix space and generalizations. It is intended for beginning graduate students in mathematics or researchers in physics or engineering. As with the introductory book entitled "Harmonic Analysis on Symmetric Spaces - Euclidean Space, the Sphere, and the PoincarÃƒÂ© Upper Half Plane, the style is informal with an emphasis on motivation, concrete examples, history, and applications. The symmetric spaces considered here are quotients X=G/K, where G is a non-compact real Lie group, such as the general linear group GL(n,P) of all n x n non-singular real matrices, and K=O(n), the maximal compact subgroup of orthogonal matrices. Other examples are Siegel's upper half "plane" and the quaternionic upper half "plane". In the case of the general linear group, one can identify X with the space Pn of n x n positive definite symmetric matrices.Many corrections and updates have been incorporated in this new edition. Updates include discussions of random matrix theory and quantum chaos, as well as recent research on modular forms and their corresponding L-functions in higher rank.Ã Â Many applications have been added, such as the solution of the heat equation on Pn, the central limit theorem of Donald St. P. Richards for Pn, results on densest lattice packing of spheres in Euclidean space, and GL(n)-analogs of the Weyl law for eigenvalues of the Laplacian in plane domains. Topics featured throughout the text include inversion formulas for Fourier transforms, central limit theorems, fundamental domains in X for discrete groups Ã â œ (such as the modular group GL(n,Z) of n x n matrices with integer entries and determinant Ã Â 1), connections with the problem of finding densest lattice packings of spheres in Euclidean space, automorphic forms, Hecke operators, L-functions, and the Selberg trace formula and its applications in spectral theory as well as number theory.

Book Information

Hardcover: 487 pages

Publisher: Springer; 2nd ed. 2016 edition (April 27, 2016)

Language: English

ISBN-10: 1493934066

ISBN-13: 978-1493934065

Product Dimensions: 6.1 x 1.1 x 9.2 inches

Shipping Weight: 2 pounds (View shipping rates and policies)

Average Customer Review: Be the first to review this item

Best Sellers Rank: #1,486,272 in Books (See Top 100 in Books) #98 inÃ Â Books > Science &

Math > Mathematics > Infinity #209 inÃ Â Books > Science & Math > Mathematics > Pure Mathematics > Group Theory #278 inÃ Â Books > Science & Math > Mathematics > Pure Mathematics > Algebra > Abstract

Customer Reviews

Ã¢â ¬Å“It is very nice to have available, now, the second, updated version of the entire set Ã¢â ¬Â¦. Audrey Terras has done the mathematical community (and not just number theorists and modular formers) a great service: these books are a major contribution on several fronts, including the pedagogical one. They are of course also excellent references for various mathematical themes that are otherwise scattered all through the recent literature.Ã¢â ¬Â• (Michael Berg, MAA Reviews, maa.org, July, 2016)

This text explores the geometry and analysis of higher rank analogues of the symmetric spaces introduced in volume one. To illuminate both the parallels and differences of the higher rank theory, the space of positive matrices is treated in a manner mirroring that of the upper-half space in volume one. This concrete example furnishes motivation for the general theory of noncompact symmetric spaces, which is outlined in the final chapter. The book emphasizes motivation and comprehensibility, concrete examples and explicit computations (by pen and paper, and by computer), history, and, above all, applications in mathematics, statistics, physics, and engineering.The second edition includes new sections on Donald St. P. RichardsÃ¢â ¬â„¢s central limit theorem for O(n)-invariant random variables on the symmetric space of GL(n, R), on random Ã Â matrix theory, and on advances in the theory of automorphic forms on arithmetic groups.

Theological, and Pastoral Perspective Ethereum: The Definite Quick & Easy Blueprint To Understand and Profit with Ethereum Distributions in the Physical and Engineering Sciences: Distributional and Fractal Calculus, Integral Transforms and Wavelets (Applied and Numerical Harmonic Analysis) Stochastic Models, Information Theory, and Lie Groups, Volume 1: Classical Results and Geometric Methods (Applied and Numerical Harmonic Analysis) Stochastic Models, Information Theory, and Lie Groups, Volume 2: Analytic Methods and Modern Applications (Applied and Numerical Harmonic Analysis) An Introduction to Sobolev Spaces and Interpolation Spaces (Lecture Notes of the Unione Matematica Italiana) Harmonic Analysis and Applications (Studies in Advanced Mathematics) Symmetric Passing: Club passing rhythms for two, three, and four jugglers An Introduction to Harmonic Analysis (Cambridge Mathematical Library) Random Fourier Series with Applications to Harmonic Analysis. (AM-101), Volume 101 (Annals of Mathematics Studies) Harmonic Analysis: From Fourier to Wavelets (Student Mathematical Library) Real Analysis: Measure Theory, Integration, and Hilbert Spaces (Princeton Lectures in Analysis) (Bk. 3) ISO/IEC 11770-2:1996, Information technology - Security techniques - Key management - Part 2: Mechanisms using symmetric techniques