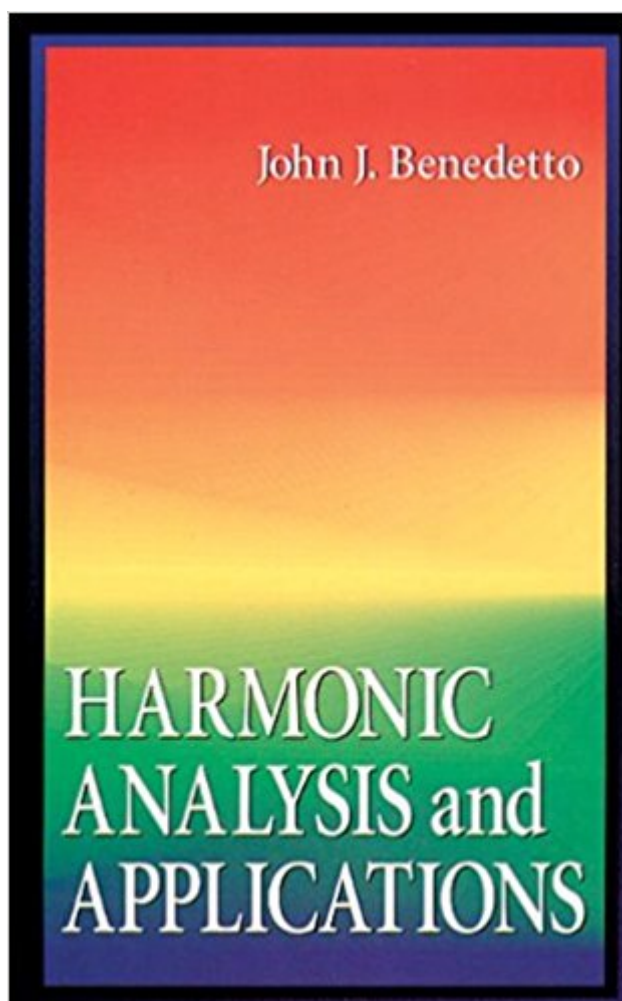


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# Harmonic Analysis And Applications (Studies In Advanced Mathematics)



## Synopsis

Harmonic analysis plays an essential role in understanding a host of engineering, mathematical, and scientific ideas. In *Harmonic Analysis and Applications*, the analysis and synthesis of functions in terms of harmonics is presented in such a way as to demonstrate the vitality, power, elegance, usefulness, and the intricacy and simplicity of the subject. This book is about classical harmonic analysis - a textbook suitable for students, and an essay and general reference suitable for mathematicians, physicists, and others who use harmonic analysis. Throughout the book, material is provided for an upper level undergraduate course in harmonic analysis and some of its applications. In addition, the advanced material in *Harmonic Analysis and Applications* is well-suited for graduate courses. The course is outlined in Prologue I. This course material is excellent, not only for students, but also for scientists, mathematicians, and engineers as a general reference. Chapter 1 covers the Fourier analysis of integrable and square integrable (finite energy) functions on  $\mathbb{R}$ . Chapter 2 of the text covers distribution theory, emphasizing the theory's useful vantage point for dealing with problems and general concepts from engineering, physics, and mathematics. Chapter 3 deals with Fourier series, including the Fourier analysis of finite and infinite sequences, as well as functions defined on finite intervals. The mathematical presentation, insightful perspectives, and numerous well-chosen examples and exercises in *Harmonic Analysis and Applications* make this book well worth having in your collection.

## Book Information

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## Customer Reviews

The present book may definitely be useful for anyone looking for particular results, examples, applications, exercises, or for a book that provides the skeleton for a good course on harmonic analysis. R. B. Følmer; Monatsheft für Mathematik; 127.1999.3

No examples, just a book of proofs. This is a horrible book and the professor that is teaching this class for the first time said the same thing. Notation is not standard which is a big problem in understanding what the author is trying to do.

I believe this book was marketed inappropriately, or something like that. This is a terrible book if you are an engineering student desiring to learn about applications of Fourier transforms to simple signals and so forth. If you are, on the other hand, a mathematics student with a strong background in real analysis, including its various standard notations, then you will be comfortable with the writing of this text. For someone in this position, who wishes to learn about the major results of harmonic analysis and their applications, as the title suggests, then this is a very solid textbook. If I could give half-stars, I would give this 4-1/2 stars. It's not a perfect book, and I don't mean to imply that it is. If it used for the right audience, however, it is a great book. Just don't be fooled by the back cover, which states "suitable for an upper-level undergraduate course" as meaning anything but upper-level mathematics course, intended for use by mathematicians.

After finishing a Bachelor's degree in math, I went back to school for electrical engineering and took a class on harmonic analysis. I'd previously taken some analysis but could not understand this book at all; it was completely incomprehensible. The only reason I think they used it was the guy who wrote it worked for the university. You should read this book if and only if you meet at least one of the two following qualifications: 1) You are a gifted, knowledgeable mathematician. (This would be a good review for a PhD student.) 2) You MUST use this book for a class.

I used this book in my teaching of a beginning grad level math (harmonic) analysis course, but relying on three books in all. Harmonic analysis is a big subject with many points of view (infinite in all directions, if you will!). One of the directions is the link to engineering problems. Specific areas of math often serve as service courses for engineers; and harmonic analysis is one area with a rich set of links to engineering problems. Things are complicated however by the difference in terminology which is used in the two worlds. You might almost say that they speak different languages; and they have different aims, by necessity! --Benedetto's book makes a heroic, and, in

my view, very successful effort in highlighting the engineering significance of the basic principles of harmonic analysis. Few harmonic analysis books even try. Benedetto's book may be a bit hard for beginning students (there is a lot in it!), but the investment my students put into it was well worth the effort.

After struggling with this book for a semester, it became apparent to me that while the book is rich in scope, its allusions to so many branches of mathematics and incomplete detailing of these allusions merely serve to bewilder the undergraduate and rookie grad. student of mathematics. Indeed, the book is an excellent reference for those who are already EXTREMELY well-versed in the subject and/or are looking to branch out into more detail and abstraction. For the rest of us, however, this book is ENTIRELY unsuitable--even, I daresay, for the "advanced undergraduate" this book purports to aim itself at. So ignore the hype of professional book reviewers and take it from someone in the trenches: buy something intelligible from the myriad of books out there on Fourier Theory and Harmonic Analysis.

I am not really sure if this book is good or not; for an electrical engineering student this book might as well be written in another language. Being a senior I had already covered about 50% of the material in this book in previous classes; I found it amazing that despite this, I could not confirm my knowledge by reading the same material out of the Benedetto book. The problem is that the text is written EXTREMELY cryptically. I am not sure if this is standard notation for math students; but the notation used is incredible unfamiliar and irritating for any of the engineering fields. In addition the book appears to lack any type of continuity. Although the chapters are laid out nicely, the inter-chapter organization seems to be comprised of a series of random theorems thrown together. Conclusion: In reading this book I had to "stop and translate" every few lines, the notation is not standard for engineering, and this book feels more like a series of scholarly papers tied together, than like a real book.

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