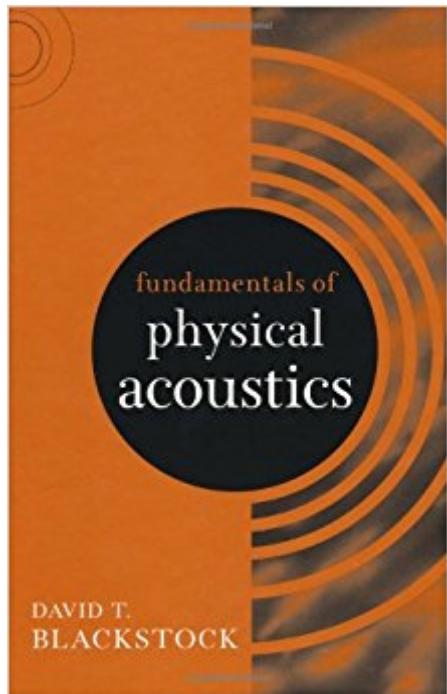


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# Fundamentals Of Physical Acoustics



## Synopsis

AN AUTHORITATIVE, UP-TO-DATE INTRODUCTION TO PHYSICAL ACOUSTICS Easy to read and understand, Fundamentals of Physical Acoustics fills a long-standing need for an acoustics text that challenges but does not overpower graduate students in engineering and physics. Mathematical results and physical explanations go hand in hand, and a unique feature of the book is the balance it strikes between time-domain and frequency-domain presentations. Fundamentals of Physical Acoustics is intended for a two-semester, first-year graduate course, but is also suitable for advanced undergraduates. Emphasis on plane waves in the first part of the book keeps the mathematics simple yet accommodates a broad range of topics: propagation, reflection and transmission, normal modes and simple waveguides for rectilinear geometries, horns, inhomogeneous media, and sound absorption and dispersion. The second part of the book is devoted to a more rigorous development of the wave equation, spherical and cylindrical waves (including the more advanced mathematics required), advanced waveguides, baffled piston radiation, diffraction (treated in the time domain), and arrays. Applications and examples are drawn from: \* Atmospheric acoustics \* Noise control \* Underwater acoustics \* Engineering acoustics \* Acoustical measurements Supplemented with more than 300 graphs and figures as well as copious end-of-chapter problems, Fundamentals of Physical Acoustics is also an excellent professional reference for engineers and scientists.

## Book Information

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## Customer Reviews

"This book is an excellent piece of work. The text is extremely clear and goes a long way towards

meeting the declared pedagogical target. The author has written a comprehensive text. The proportions of the equations and explanations/interpretations are particularly well balanced. Throughout the book, the context and the validity domain for any equation derived are clearly stated. No doubt this book will be of invaluable help for students, academics, and engineers." (Applied Acoustics, March 2002)

**AN AUTHORITATIVE, UP-TO-DATE INTRODUCTION TO PHYSICAL ACOUSTICS** Easy to read and understand, *Fundamentals of Physical Acoustics* fills a long-standing need for an acoustics text that challenges but does not overpower graduate students in engineering and physics. Mathematical results and physical explanations go hand in hand, and a unique feature of the book is the balance it strikes between time-domain and frequency-domain presentations. *Fundamentals of Physical Acoustics* is intended for a two-semester, first-year graduate course, but is also suitable for advanced undergraduates. Emphasis on plane waves in the first part of the book keeps the mathematics simple yet accommodates a broad range of topics: propagation, reflection and transmission, normal modes and simple waveguides for rectilinear geometries, horns, inhomogeneous media, and sound absorption and dispersion. The second part of the book is devoted to a more rigorous development of the wave equation, spherical and cylindrical waves (including the more advanced mathematics required), advanced waveguides, baffled piston radiation, diffraction (treated in the time domain), and arrays. Applications and examples are drawn from: Atmospheric acoustics Noise control Underwater acoustics Engineering acoustics Acoustical measurements Supplemented with more than 300 graphs and figures as well as copious end-of-chapter problems, *Fundamentals of Physical Acoustics* is also an excellent professional reference for engineers and scientists.

I knew I liked this book when I read section C of the introduction:"How is the wave equation derived? Three common physical systems that carry waves - the electrical transmission line, the flexible string, and the compressible fluid - are considered in this section."I needed a practical book to help me when I somehow volunteered myself to perform some acoustic experiments at work. They kind of said "Hey, you're a physicist. Can you do this?" And then I said "Uh... sure." I read through what I could find in Halliday and Resnick, a book I like for its simplicity. But then I needed something more complicated, so I bought Morse and Ingard, which was way too much. Then I found this book.And its a good thing I did. The book uses the wave equation to solve each of these problems, and if you pay attention, you can assemble a nice, general approach to solving problems

of this nature, and you'll have a list of analogous variables when you're done. The whole book is written like this. It's not an ASM Handbook by any means, but it is more practical than Morse and Ingard, has more drawings and diagrams, and I was surprised to find one of the cleanest, simplest descriptions of Bessel functions I've seen yet. The book addresses the complex problems without doing endless integrals, and it whenever possible it works through the problem and doesn't rely on phrases like "the reduction of step X to step Y is left as an exercise for the student" in its derivations. I appreciate this - it makes the book more friendly as a reference text. Also, when I was a graduate student I never paid attention to literature references in text books because I (naively) considered them to be outdated. But a literature search is one of the best tools I have available to me in the working world - if you have access to a literature database, you will find the literature references at the end of some chapters to be very useful. Consider it a useful reference text, and probably a practical textbook as well.

I used this for my graduate aeroacoustics course. It really helped me understand the material a lot.

Many printed errors. Strange and opaque at times. Overall, not a bad introductory book for acoustics. Working knowledge of Calculus and Differential Equations REQUIRED before reading.

The book itself is good, however 's Kindle conversion is worthless. Many of the equations/diagrams are unreadable and there are numerous formatting errors. Do not buy the Kindle version.

I am a practicing acoustician, and have yet to encountered a better and more comprehensive physical acoustics resource.

Excellent book for learning.

More complex than expected for a book on fundamentals but useful none the less. Its a keeper for now but still looking.

Very good text-book about classic topic, well known author. No other comment needed. a a a a a a a

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