Notes on ACOUSTICS

Uno Ingard

Written by a noted authority in the subject area, this book provides an understanding of the fundamentals of acoustics and a solid foundation for problem solving. It may be used as a reference by scientists and engineers or as a text in a senior-undergraduate or graduate-level course.

In addition to the "standard" material on acoustics, several of the chapters contain lesser known areas of the field and hitherto unpublished material. This is the case particularly in Chapters 7, 8, 9, and 10 dealing with such topics as flow-induced sound and instabilities, flow interaction with acoustic resonators, atmospheric acoustics, and some aspects of non-linear acoustics. The extensive chapter (9) on atmospheric acoustics is a result of the work sponsored by NASA. Chapter 11 is devoted to examples and applications from various parts of the book.

KEY FEATURES

- Written by an international authority and winner of the Rayleigh Medal (Institute of Acoustics)
- Emphasizes a descriptive presentation to provide "physical insight" and aspects of problem-solving" without sacrificing the importance of mathematical analysis
- Includes the author's *unpublished* material on flow-induced sound and instabilities, flow interaction with acoustic resonators, atmospheric acoustics, and some aspects of non-linear acoustics

BRIEF TABLE OF CONTENTS

1. Introduction. 2. Oscillations. 3. Sound Waves. 4. Sound Reflection, Absorption, and Transmission. 5. The Wave Equation. 6. Room and Duct Acoustics. 7. Flow Induced Sound and Instabilities. 8. Sound Generation by Fans. 9. Atmospheric Acoustics. 10. Mean-Flow Effects & Non-Linear Acoustics. 11. Examples. Appendixes. Index.

ABOUT THE AUTHOR

Uno Ingard is the internationally recognized professor emeritus of physics (MIT) who was awarded the Gold Medal of the Acoustical Society of America, the Rayleigh Medal by the Institute of Acoustics (UK), the Education Award of the Institute of Noise Control Engineering, the John Ericsson Medal, American Society of Swedish Engineers and the Per Bruel Gold Medal of the American Society of Mechanical Engineers. He has written numerous books, as well as journal articles in the fields of acoustics and fluid physics that have appeared in the *Journal of the Acoustical Society of America, Physics of Fluids, Physical Review, Physical Review Letters, Transactions of ASME*, and *Acustica* (Germany); he is a fellow of the American Physical Society and was awarded membership in the prestigious National Academy of Engineering .

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