1. Record Nr. UNINA9910139024003321

Autore	Kim Yang-Hann
Titolo	Sound visualization and manipulation / / Yang-Hann Kim and Jung-Woo Choi, Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea
Pubbl/distr/stampa	Singapore : , : Wiley, , 2013 [Piscataqay, New Jersey] : , : IEEE Xplore, , [2013]
ISBN	1-118-36850-9 1-118-36848-7 1-118-36849-5
Descrizione fisica	1 online resource (438 p.)
Altri autori (Persone)	ChoiJung-Woo
Disciplina	534.01/5153533
Soggetti	Sound-waves - Mathematical models Helmholtz equation
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	About the Author xi -- Preface xiii -- Acknowledgments xvii -- Part I ESSENCE OF ACOUSTICS -- 1 Acoustic Wave Equation and Its Basic Physical Measures 3 -- 1.1 Introduction 3 -- 1.2 One-Dimensional Acoustic Wave Equation 3 -- 1.2.1 Impedance 9 -- 1.3 Three-Dimensional Wave Equation 10 -- 1.4 Acoustic Intensity and Energy 11 -- 1.4.1 Complex-Valued Pressure and Intensity 16 -- 1.5 The Units of Sound 18 -- 1.6 Analysis Methods of Linear Acoustic Wave Equation 27 -- 1.6.1 Acoustic Wave Equation and Boundary Condition 28 -- 1.6.2 Eigenfunctions and Modal Expansion Theory 31 -- 1.6.3 Integral Approach Using Green's Function 35 -- 1.7 Solutions of the Wave Equation 39 -- 1.7.1 Plane Wave 40 -- 1.7.2 Spherical Wave 41 -- 1.8 Chapter Summary 46 -- References 46 -- 2 Radiation, Scattering, and Diffraction 49 -- 2.1 Introduction/Study Objectives 49 -- 2.2 Radiation of a Breathing Sphere and a Trembling Sphere 50 -- 2.3 Radiation from a Baffled Piston 58 -- 2.4 Radiation from a Finite Vibrating Plate 65 -- 2.5 Diffraction and Scattering 70 -- 2.6 Chapter Summary 79 -- 2.7 Essentials of Radiation, Scattering, and Diffraction 80 -- 2.7.1 Radiated Sound Field from an Infinitely Baffled Circular Piston 80 -- 2.7.2 Sound

Sommario/riassunto

Unique in addressing two different problems - sound visualization and manipulation - in a unified way Advances in signal processing technology are enabling ever more accurate visualization of existing sound fields and precisely defined sound field production. The idea of explaining both the problem of sound visualization and the problem of the manipulation of sound within one book supports this inter-related area of study. With rapid development of array technologies, it is possible to do much in terms of visualization and manipulation, among other technologies involved