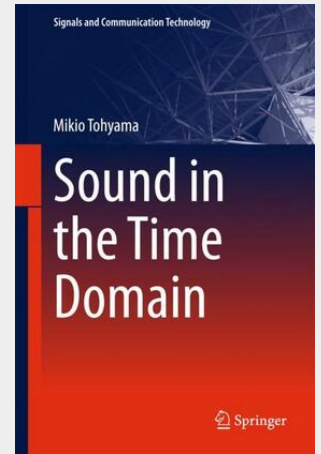


Tohyama

Sound in the Time Domain

This book addresses the nature of sound, focusing on the characteristics of sound waves in the context of time structures. This time domain approach provides an informative and intuitively understandable description of various acoustic topics such as sound waves travelling in an acoustic tube or in other media where spectral or modal analysis can be intensively performed. Starting from the introductory topic of sinusoidal waves, it discusses the formal relationship between the time and frequency domains, summarizing the fundamental notions of Fourier or z-transformations and linear systems theory, along with interesting examples from acoustical research. The book's novel approach is of interest to research engineers and scientists. In particular, the expressions concerning waveforms including the impulse responses are important for audio engineers who are familiar with digital signal analysis. Every chapter includes simple exercises designed to be solved without the need for a computer. Thus they help reconfirm the fundamental ideas and notions present in every chapter. The book is self-contained and concise, and requires only basic knowledge of acoustics and signal processing, making it valuable as a textbook for graduate and undergraduate university courses.

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