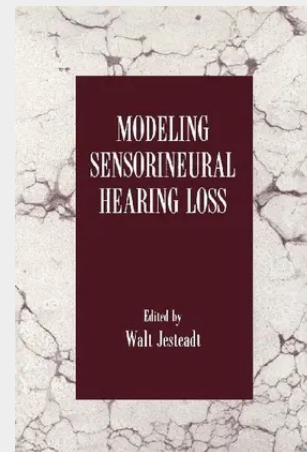


Modeling Sensorineural Hearing Loss

A recent study indicates that 20 million people in the United States have significant sensorineural hearing loss. Approximately 95% of those people have partial losses, with varying degrees of residual hearing. These percentages are similar in other developed countries. What changes in the function of the cochlea or inner ear cause such losses? What does the world sound like to the 19 million people with residual hearing? How should we transform sounds to correct for the hearing loss and maximize restoration of normal hearing? Answers to such questions require detailed models of the way that sounds are processed by the nervous system, both for listeners with normal hearing and for those with sensorineural hearing loss. This book contains chapters describing the work of 25 different research groups. A great deal of research in recent years has been aimed at obtaining a better physiological description of the altered processes that cause sensorineural hearing loss and a better understanding of transformations that occur in the perception of those sounds that are sufficiently intense that they can still be heard. Efforts to understand these changes in function have lead to a better understanding of normal function as well. This research has been based on rigorous mathematical models, computer simulations of mechanical and physiological processes, and signal processing simulations of the altered perceptual experience of listeners with sensorineural hearing loss. This book provides examples of all these approaches to modeling sensorineural hearing loss and a summary of the latest research in the field.

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81,40 €

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Lieferfrist: bis zu 10 Tage

Artikelnummer: 9781138876606

Medium: Buch

ISBN: 978-1-138-87660-6

Verlag: Routledge

Erscheinungstermin: 21.01.2019

Sprache(n): Englisch

Auflage: 1. Auflage 2019

Produktform: Kartoniert

Gewicht: 739 g

Seiten: 514

Format (B x H): 152 x 229 mm

