A New Book: Auditory Neuroscience


This book offers an integrated account of hearing in terms of the neural processes that take place in different parts of the auditory system.

Every time we listen to speech, to music, to footsteps approaching or retreating, our auditory perception is the result of a long chain of diverse and intricate processes that unfold within the source of the sound itself, in the air, in our ears, and, most of all, in our brains. Hearing is an "everyday miracle" that, despite its staggering complexity, seems effortless. This book offers an integrated account of hearing in terms of the neural processes that take place in different parts of the auditory system.

Because hearing results from the interplay of so many physical, biological, and psychological processes, the book pulls together the different aspects of hearing— including acoustics, the mathematics of signal processing, the physiology of the ear and central auditory pathways, psychoacoustics, speech, and music—into a coherent whole. After offering essential background material on physical acoustics and physiology, the book explores the neurobiology behind four fundamental facets of hearing—the perception...
of pitch, the processing of speech, the localization of sound sources, and the perceptual separation of sound mixtures. It also discusses the development and plasticity of the auditory system and how our knowledge of auditory processing has informed such current technologies for treating hearing loss as hearing aids and cochlear implants. Additional resources for readers, students, and instructors, including sound samples, color images, animations, self-test questions, and links, are available on the book's Web site.

About the Authors

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Endorsements

“This book is unique in its elegant unification of a broad view of the fundamentals of hearing with a highly sophisticated account of the current state of auditory neuroscience. Each chapter is a self-contained, coherent, and comprehensive account of a major attribute or function of hearing that takes the reader through an exciting journey of discovery, beginning with basic definitions and ending with a balanced critique of the diverse opinions and ideas that are typical of a lively field of investigation. In such a scientific endeavor, this book is a valuable guide for the novice and the expert alike.”

Shihab Shamma, Professor of Electrical Engineering, University of Maryland, College Park.

Hardcover: 336 pages

More information about the book and first book chapter (PDF) is available at Auditory Neuroscience website.

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