The Auditory System and Human Sound-Localization Behavior

ISBN: 978-0-12-801529-2; PII: B978-0-12-801529-2.00015-5; Author: VANOPSTALENGLISH; Document ID: 00015; Chapter ID: c0075

ISBN: 978-0-12-801529-2; PII: B978-0-12-801529-2.00015-5; Author: VANOPSTALENGLISH; Document ID: 00015; Chapter ID: c0075

The Auditory System and Human Sound-Localization Behavior

John van Opstal
Department of Biophysics
Donders Centre for Neuroscience
Radboud University Nijmegen
The Netherlands

ELSEVIER

AMSTERDAM • BOSTON • HEIDELBERG • LONDON
NEW YORK • OXFORD • PARIS • SAN DIEGO
SAN FRANCISCO • SINGAPORE • SYDNEY • TOKYO
Academic Press is an Imprint of Elsevier

ISBN: 978-0-12-801529-2; PII: B978-0-12-801529-2.00015-5; Author: VANOPSTALENGLISH; Document ID: 00015; Chapter ID: c0075

Academic Press is an imprint of Elsevier
125, London Wall, EC2Y 5AS, UK
525 B Street, Suite 1800, San Diego, CA 92101-4495, USA
50 Hampshire Street, 5th Floor, Cambridge, MA 02139, USA
The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, UK

Notices
Knowledge and best practice in this field are constantly changing. As new research and experience broaden our understanding, changes in research methods, professional practices, or medical treatment may become necessary.

Practitioners and researchers must always rely on their own experience and knowledge in evaluating and using any information, methods, compounds, or experiments described herein. In using such information or methods they should be mindful of their own safety and the safety of others, including parties for whom they have a professional responsibility.

To the fullest extent of the law, neither the Publisher nor the authors, contributors, or editors, assume any liability for any injury and/or damage to persons or property as a matter of products liability, negligence or otherwise, or from any use or operation of any methods, products, instructions, or ideas contained in the material herein.

British Library Cataloguing-in-Publication Data
A catalogue record for this book is available from the British Library

Library of Congress Cataloging-in-Publication Data
A catalog record for this book is available from the Library of Congress

ISBN: 978-0-12-801529-2

Typeset by Thomson Digital
Printed and bound in USA

ISBN: 978-0-12-801529-2; PII: B978-0-12-801529-2.00016-7; Author: VANOPSTALENGLISH; Document ID: 00016; Chapter ID: c0080

Dedication

**To Dr Dick Donker (Dec 21, 1934–Oct 1, 2014):
neurologist, life artist, lover of music,
and of auditory science.**

ISBN: 978-0-12-801529-2; PII: B978-0-12-801529-2.00020-9; Author: VANOPSTALENGLISH; Document ID: 00020; Chapter ID: c0100

Contents

ISBN: 978-0-12-801529-2; PII: B978-0-12-801529-2.00017-9; Author: VANOPSTALENGLISH; Document ID: 00017; Chapter ID: c0085

ISBN: 978-0-12-801529-2; PII: B978-0-12-801529-2.00017-9; Author: VANOPSTALENGLISH; Document ID: 00017; Chapter ID: c0085

ISBN: 978-0-12-801529-2; PII: B978-0-12-801529-2.00017-9; Author: VANOPSTALENGLISH; Document ID: 00017; Chapter ID: c0085

ISBN: 978-0-12-801529-2; PII: B978-0-12-801529-2.00017-9; Author: VANOPSTALENGLISH; Document ID: 00017; Chapter ID: c0085

List of Abbreviations

2AFC	Two-alternative forced choice
AC	Auditory cortex
AM	Amplitude modulation
AMP	Auditory median plane
AN	Auditory nerve
ANN	Artificial neural network
AV	Audiovisual
AVCN	Antero-ventral part of Cochlear Nucleus
BB	Black box
BCD	Bone-conduction device
BM	Basilar membrane
BP	Band-pass
BS	Band-stop
CI	Cochlear implant
CN	Cochlear nucleus
CNS	Central nervous system
DCN	Dorsal part of Cochlear Nucleus
DTF	Directional transfer function
DMF	Dynamic movement field
FEF	Frontal eye fields
FM	Frequency modulation
FOV	Field of view
FRF	Future receptive field
FT	Fourier transform
GBC	Globular bushy cell
GME	Gaze-motor error
GWN	Gaussian white noise
HA	Hearing aid
HP	High-pass
HRTF	Head-related transfer function
HSE	Head-shadow effect
IC	Inferior colliculus
ICc	Central nucleus of IC
ICx	External nucleus of IC
IHC	Inner hair cell
ILD	Interaural level difference
INC	Interstitial nucleus of Cajal
IOR	Inhibition of return
IPD	Interaural phase difference

ISBN: 978-0-12-801529-2; PII: B978-0-12-801529-2.00012-X; Author: VANOPSTALENGLISH; Document ID: 00012; Chapter ID: c0060

ISI	Intersaccadic interval
ITD	Interaural time difference
LP	Low-pass
LS	Linear system
LSO	Lateral superior olive
LT	Laplace transform
MAA	Minimum audible angle
MAP	Maximum a-posteriori
MDT	Medial-dorsal thalamus
MF	Movement field
MGB	Medial geniculate body
MI	Multisensory Index
MLB	Medium-lead burst neuron
MLE	Maximum Likelihood Estimate
MNTB	Medial nucleus of the trapezoid body
MSO	Medial superior olive
MVN	Medial vestibular nucleus
NI	Neural integrator
NLS	Nonlinear system
NPH	Nucleus prepositus hypoglossi
OAE	Oto-acoustic emission
OHC	Outer hair cell
OMR	Oculomotor range
OPN	Omni-pause neuron
PG	Pulse generator
PPC	Posterior parietal cortex
PPRF	Para-pontine reticular formation
PSG	Pulse-step generator
PVCN	Postero-ventral part of Cochlear Nucleus
riMLF	rostral interstitial nucleus of the medial longitudinal fasciculus
RM	Reissner's membrane
ROC	Receiver operator characteristic
RT	Reaction time
SBC	Spherical bushy cell
SC	Superior colliculus
SDT	Signal-detection theory
SNR	Signal to noise ratio
SPL	Sound-pressure level
SR	Spontaneous firing rate
SRT	Saccade reaction time
SSD	Single-sided deaf(ness)
STT	Spatial-to-temporal transformation
TM	Tectorial membrane
TOT	Tonotopic to oculocentric transformation
UCHL	Unilateral Conductive Hearing Loss
VOR	Vestibular-ocular reflex
VPG	Vectorial pulse generator
VS	Vector strength

ISBN: 978-0-12-801529-2; PII: B978-0-12-801529-2.00012-X; Author: VANOPSTALENGLISH; Document ID: 00012; Chapter ID: c0060