Curriculum Vitae

Name: **Norbert DILLIER**
Title: Prof.Dr.sc.techn. Dipl.El.Ing. ETH
Nationality: Swiss
Current address: ENT Department, University Hospital, CH-8091 Zurich, Switzerland
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Education:

1970-1974	Studies in electrical and electronic engineering at the Federal Institute of Technology (ETH) Zurich, graduated as Dipl.El.Ing. in 1974.
1975-1976	Assistant researcher at the Institute for Biomedical Engineering (ETH and University of Zurich)
1978	Ph.D. dissertation ETH-Z (“Entwicklung und klinische Evaluation einer Gehörsprothese für sensorisch taube Patienten basierend auf der elektrischen Stimulation des achten Nervs”).
1996	Habilitation (venia legendi) at the Medical Faculty of the University of Zurich, thesis "Mikroelektronische Hörprothesen".

Professional experience and academic appointments:

1976-1979	Research associate at the ENT-Department, University Hospital Zurich
since 1979	Senior research associate (Oberassistent), head of the laboratory of experimental audiology (LEA) at the ENT-Department, University Hospital Zurich
1982	Consultant at the Bioscience Research Laboratory, 3M, St. Paul, USA, with visits to other research laboratories and clinics
1996	Privatdozent (lecturer) at the Medical Faculty of the University of Zurich, Lehrbeauftragter (lecturer) at the Swiss Federal Institute of Technology of Zurich (ETHZ), Physics Department, Master of Advanced Studies (MAS) Medical Physics
2005	Professor for Experimental Audiology (Titularprofessor) at the University of Zurich
2006 - 2015	Head of Research Division of ENT-Department, University Hospital Zurich
2016	Senior Research Fellow, University Hospital and University of Zurich

Major research interests, keywords:
To better understand and improve the function of auditory prostheses such as cochlear implants, auditory brainstem implants as well as conventional and implantable hearing aids. Enhance the speech discrimination performance, especially in noisy environments and improve the sound quality for music perception with these devices.
Investigate new methods for programming and speech processor fitting especially for the very young children using objective electrophysiological measurement procedures.

Previous and Current Research:
The focus of previous and current research projects was to better understand and improve the function of auditory prostheses such as cochlear implants, auditory brainstem implants as well as conventional and implantable hearing aids.

The main goals are to enhance the speech discrimination performance, especially in noisy environments and to improve the sound quality for music perception with these devices. New methods for programming and speech processor fitting especially for the very young children using objective electrophysiologic measurement procedures are a major area of research. Other areas of research are the use of bilateral electrical or the combined electrical acoustical stimulation for improved localization and speech recognition in noise.

The investigation of the mechanical properties of the outer and middle ear using laser Doppler vibrometry and finite element modeling aims to further the basic understanding of these structures and to develop tools for better middle ear prostheses.

Teaching experience:

- Supervision of Semester, Diploma and Dissertation work at ETH and UZH (Institute for Biomedical Engineering at the Federal Institute of Technology and the University of Zurich) (since 1975)
- Supervision and organization of course exercises related to the lecture “Biomedical Engineering” (since 1975).
- Lecture “Medical Acoustics” (“Medizinische Akustik”), post graduate studies in medical physics, ETH (1995-2015)
- Lectures, presentations, chair person, moderator at national and international scientific congresses, symposia, workshops, courses.
- Chairman of 14 international Neural Response Telemetry workshops (1997-2007)
- Chairman of the fifth annual meeting of the German Audiological Society at the University of Zurich, 2002
- Chairman of the Second International Symposium on Music and Cochlear Implants, University of Zurich, 2008
- Chairman of the Performance Outcomes Symposium, Cochlear Science and Research Seminar, Munich, 2010
- Chairman of Cochlear Satellite Symposium “NRT: a solid foundation for an exciting future”, Amsterdam, 2012
- Chairman of Scientific Symposium ARCHES/ICanHear, Zurich 2016

Memberships in professional societies and associations:

- Swiss ENT Society
- Swiss Society for Acoustics
- German ENT Society
- Arbeitsgemeinschaft deutscher Audiologen und Neuro-Otologen (ADANO)
- German Society for Audiology (DGA), past president of the society (presidency: March 2005 to June 2007)
- European Federation of Audiological Societies (EFAS), former board member (Treasurer)
- Acoustical Society of America
- IEEE Acoustics Speech and Signal Processing Society
- International Collegium of Rehabilitative Audiology (ICRA)
- Collegium Oto-Rhino-Laryngologicum Amicitiae Sacrum (CORLAS)

Membership in Journal Editorial Boards:

- Audiology & Neurotology - Basic Research and Clinical Applications (Editor-in-Chief: J.P. Harris)
- Audiology Research (Editor-in-Chief: Giacinto Asprella Libonati)
- Cochlear Implants International (Editor-in-Chief: J. Graham)
- Journal of Hearing Science (Editor-in-Chief: H. Skarzynski)
- Journal of International Advanced Otology (Editor-in-Chief, O.N. Oezgirgin)
- Otology & Neurotology (Editor-in-Chief: B. Crane)
- Zeitschrift für Audiologie - Audiological Acoustics (Editor-in-Chief: J. Kiessling)

Awards:

- Jean-Stieger-Preis 1993, by the Swiss Society of Acoustics (together with Dr.med. T. Spillmann)
- Georg-Friedrich-Götz-Preis 1996, Medical Faculty of the University of Zurich

- Förderpreis 2003 der Stiftung Forschungsgemeinschaft Deutscher Hörgeräte-Akustiker
- Honorary Membership German Audiological Society 2019

Member of PhD and MD thesis examination committees (34):

- Wohlbauer D. (2021) Exploration of a Novel Bilateral InterlACE cochlear Implant Coding Paradigm. PhD thesis University of Zurich
- Giurda R. (2020) Improved sound classification by means of sound localization in hearing devices. Diss, ETH Zurich
- Fischer T (2020) Spatial Hearing with Cochlear Implants: Development and Evaluation of Signal Processing Strategies. PhD Thesis University of Berne
- Tabibi S. (2019): A bio-inspired coding (BIC) strategy for cochlear implants, Diss. ETH Zürich
- Wolff A (2019) Health-related quality of life following hearing aid treatment - A large cohort study. PhD thesis Aalborg University, Denmark
- Deprez H. (2017): Cochlear implant artefact suppression in EEG measurements. PhD Thesis University of Leuven, Belgium
- Luke R. (2016): Supra-threshold Electrically Evoked Auditory Steady-State Responses in Cochlear Implant Users. PhD Thesis University of Leuven, Belgium
- Wimmer W. (2015): Multidisciplinary Approaches toward an Improved Efficacy of Cochlear Implants. PhD Thesis Biomedical Engineering, University of Bern
- Gerig R (2015): Sound transmission in the middle ear. PhD Thesis MNF, University of Zurich
- Koning R. (2014): Speech enhancement in cochlear implants. PhD Thesis University of Leuven, Belgium
- Obaid ur Rehman Q. (2014): Speech perception in noise for cochlear implant users. PhD Thesis University of Leuven, Belgium
- Mörtlbauer K. (2014): Application of a GTEM cell to determine RF induced currents in medical implant electrodes of various geometries. Diss. Universität Innsbruck
- Vandali A.E. (2014): Optimisation of rate-pitch perception in cochlear implant hearing. Ph.D. thesis The University of Melbourne
- Nägeli A.M. (2013): Vergleichende Studie einer neuen Sprachcodierungsstrategie für Cochlea-Implantate, Diss. Universität Zürich
- Guignard J. (2013): Implants in the temporal bone: anatomy, physics, and surgical procedure aspects. Diss. University of Berne, ArtOrg Center for biomedical engineering
- Grimm G. (2012): Towards optimum amplification in binaural hearing aids: Tools, models and algorithms for compensating hearing impairment, Diss. Carl-von-Ossietzky-Universität Oldenburg
- Müller M.F. (2012): Measuring, predicting and improving the perception of space with bilateral hearing instruments, Diss. ETH Zürich
- Omran S.A. (2011): Mechanisms of Music Perception through Cochlear Implants, Diss. Uni Zürich
- Taft D.A. (2009): Cochlear Implant Sound Coding with Across-frequency Delays. Ph.D. thesis University of Melbourne
- Müller-Deile J. (2008): Verfahren zur Anpassung und Evaluation von Cochlear Implantat Sprachprozessoren. Diss. Carl von Ossietzky Universität Oldenburg, Fakultät für Mathematik und Naturwissenschaften
- Van den Bogaert T. (2008): Preserving binaural cues in noise reduction algorithms for hearing aids. Diss. Katholieke Universiteit Leuven, Faculteit Ingenieurswetenschappen Departement Elektrotechnik and Faculteit Geneeskunde Departement Neurowetenschappen
- Schmuziger C.K. (2006): Der Einfluss von Artefakten beim Hörscreening mit einem automatisierten OAE-Screener. Diss. Universität Zürich
- Ferrazzini M. (2003): Virtual Middle Ear: a Dynamic Mathematical Model based on the Finite Element Method. Diss. ETH no. 15294

- Willi U. (2003): Middle-ear Mechanics: The Dynamic Behavior of the Incudo-Malleolar Joint and its Role During the Transmission of Sound. Diss. Universität Zürich
- Timms O. (2003): Speech Processing Strategies Based on the Sinusoidal Speech Model for the Profoundly Hearing Impaired. Diss. ETH no. 15167
- Hamacher V. (2003): Signalverarbeitungsmodell des elektrisch stimulierten Gehörs. Diss. RWTH Aachen
- Büchler M. (2002): Algorithms for Sound Classifications in Hearing Instruments. Diss. ETH no. 14498
- Wyrsch S. (2000): Adaptive Subband Signal Processing for Hearing Instruments. Diss. ETH no. 13577
- Jones P.A. (1994): The coding of voice-source information within a multichannel cochlear implant, Ph.D. thesis University of Melbourne
- Bögli H. (1993): Sprachverarbeitungsverfahren für ein mehrkanaliges Cochlear Implant. Diss. ETH Nr. 9962
- Kompis M. (1993) Der adaptive Beamformer: Evaluation eines Verfahrens zur Störgeräuschunterdrückung für Hörgeräte. Diss. ETH Nr. 9960
- Fröhlich T. (1993) Digitale Signalverarbeitung für Hörbehinderte: Mehrkanalige Lautheitskorrektur im Frequenzbereich. Diss. ETH Nr. 9961
- Lim H.H. (1992): Psychophysical Studies Investigating Speech Coding Strategies for a Multi-Electrode Cochlear Implant Prosthesis, Ph.D. thesis University of Melbourne
- Lai W.K. (1990): Psychophysical studies investigating a place/rate speech coding strategy for a multi-electrode Cochlear implant, Ph.D. thesis University of Melbourne

Research grants and collaborations with industrial partners:
- Swiss National Science Foundation
- KTI/Innosuisse – Innovation Promotion Agency
- SGA – Swiss Society for Acoustics
- Ascom Audiosys AG – Bernafon AG
- Hasler Stiftung, Bern
- Phonak AG, Advanced Bionics AG, Sonova AG, Stäfa
- Cochlear AG, Basel and Cochlear Limited, Sydney
- European Commission 6th Framework Programme (project HEARCOM)
- EU Marie-Curie Initial Training Network (project ICanHear)

Reviewer for scientific journals:
- Acta Acustica united with Acustica
- Acta Oto-Laryngologica
- Applications of Signal Processing
- Audiology and Neurotology
- Audiology Research
- BioMedical Engineering Online
- Biomedical Signal Processing and Control
- BioMed Research International
- BMJ Open
- Cerebral Cortex
- Clinical Otolaryngology
- Cochlear Implants International
- Current Biology
- Ear and Hearing
- EURASIP Journal on Advances in Signal Processing
- EURASIP Journal on Applied Signal Processing
- European Archives of Oto-Rhino-Laryngology
- Folia Phoniatrica
- Frontiers in Human Neuroscience

- Hearing Research
- HNO
- IEEE Transactions on BioMedical Engineering
- IEEE Transactions on Neural Systems and Rehabilitation Engineering
- International Journal of Audiology
- Journal of the Association for Research in Otolaryngology
- Journal of the Acoustical Society of America
- Journal of the American Academy of Audiology
- Journal of International Advanced Otology
- Journal of Medical Internet Research
- Journal of Neuroscience Methods
- Journal of Hearing Science
- Otology and Neurotology
- PLoS ONE
- Speech Communication
- Technology & Health Care
- Trends in Hearing
- Zeitschrift für Audiologie

Reviewer for research institutions and foundations:
- AoHL – Action on Hearing Loss, United Kingdom
- BMBF – German Ministry for Education and Research
- Christian Doppler Forschungsgesellschaft, Austria
- DFG – German Research Association
- Ecole Polytechnique Universitaire de l'Université Lyon
- ERC – European Research Council
- ETH Zürich
- Eureka Eurostars
- EU Marie Curie Initial Training Network AUDIS (Digital Signal Processing in Audiology)
- FWO – Research Foundation Flanders, Belgium
- Hearing 4All Excellence Cluster, member of the scientific advisory board
- Hoertech gGmbH, Center of Competence for Hearing Technology, chairman of the external advisory board
- Innovationsberatungsstelle Nordbayern
- Innovation Fund Denmark
- Medizinische Hochschule Hannover
- National Science Centre Poland
- Niederösterreichische Forschungs- und Bildungsges.m.b.H. (NFB)
- Schering Stiftung
- SNF – Swiss National Research Foundation
- Technische Universität München
- The Wellcome Trust, United Kingdom
- Unity through Knowledge Fund (UKF) / Croatian Science Foundation (CSF)
- Universität Oldenburg

Scientific publications of Prof. Dillier (2014-2022)

Citation metrics:
Web of Science: 122 publications, 2136 citations, h-index 24
Research Gate: 152 publications (129 articles, 2 chapters, 20 conference papers, 1 patent), RG-score 34.48, 2645 citations, h.-index 28

Original peer reviewed publications

Akeroyd, Michael A; Arlinger, Stig; Bentler, Ruth A; Boothroyd, Arthur; Dillier, Norbert; Dreschler, Wouter A; Gagné, Jean-Pierre; Lutman, Mark; Wouters, Jan; Wong, Lena; Kollmeier, Birger (2015). International Collegium of Rehabilitative Audiology (ICRA) recommendations for the construction of multilingual speech tests. International Journal of Audiology, 54(sup2):17-22.

Blamey, Peter J; Maat, Bert; Başkent, Deniz; Mawman, Deborah; Burke, Elaine; Dillier, Norbert; Beynon, Andy; Kleine-Punte, Andrea; Govaerts, Paul J; Skarzynski, Piotr H; Huber, Alexander M; Sterkers-Artières, Françoise; Van de Heyning, Paul; O'Leary, Stephen; Fraysse, Bernard; Green, Kevin; Sterkers, Olivier; Venail, Frédéric; Skarzynski, Henryk; Vincent, Christophe; Truy, Eric; Dowell, Richard; Bergeron, François; Lazard, Diane S (2015). A Retrospective Multicenter Study Comparing Speech Perception Outcomes for Bilateral Implantation and Bimodal Rehabilitation. Ear and Hearing, 36(4):408-416.

Blamey PJ, Maat B, Başkent D, Mawman D, Burke E, Dillier N, Beynon A, Kleine-Punte A, Govaerts P, Skarzynski P, Huber AM, Sterkers-Artières F, Van de Heyning P, O'Leary S, Fraysse B, Green K, Sterkers O, Venail F, Skarzynski H, Vincent C, Truy E, Dowell R, Bergeron F, Lazard DS (2015). A Retrospective Multicenter Study Comparing Speech Perception Outcomes for Bilateral Implantation and Bimodal Rehabilitation. Ear and Hearing:Epub ahead of print.

Brand Y, Senn P, Kompis M, Dillier N, Allum JHJ (2014). Cochlear implantation in children and adults in Switzerland. Swiss Medical Weekly, 144:w13909

Dillier N (2014) Anforderungen an die technische Signalverarbeitung für geschädigte Innenohren. Zeitschrift für Audiologie, 20(2):19-21.

Dillier, Norbert; Lai, Wai Kong (2015). Speech intelligibility in various noise conditions with the Nucleus® 5 CP810 Sound Processor. Audiology Research, 5(2):69-75.

El Boghdady, Nawal; Kegel, Andrea; Lai, Waikong; Dillier, Norbert (2016). A neural-based vocoder implementation for evaluating cochlear implant coding strategies. Hearing research, 333:136-149.

Giroud, Nathalie; Hirsiger, Sarah; Muri, Raphaela; Kegel, Andrea; Dillier, Norbert; Meyer, Martin (2018). Neuroanatomical and resting state EEG power correlates of central hearing loss in older adults. Brain Structure & Function, 223(1):145-163.

Hey M, Böhnke B, Dillier N, Hoppe U, Eskilsson G, Löwgren K, Cullington H, Mauch H, Müller-Deile J (2015) The Intra-Cochlear Impedance-Matrix (IIM) test for the Nucleus ® cochlear implant. Biomed. Eng.-Biomed. Tech. 2014; 1-11

Huarte A, Ramos A, Morera C, Garcia-Ibáñez L, Battmer R, Dillier N, Wesarg T, Müller-Deile J, Hey M, Offeciers E, von Wallenberg E, Coudert C, Killian M. (2014) Evaluation of Neural Response Telemetry (NRT™) with focus on long-term rate adaptation over a wide range of stimulation rates. Cochlear Implants Int. 2014 May;15(3):136-44. doi: 10.1179/1754762814Y.0000000063

Lai WK, Dillier N, Killian M (2018) A Neural Excitability Based Coding Strategy for Cochlear Implants. Journal of Biomedical Science and Engineering 11(07):159-181

Mueller MF, Meisenbacher K, Lai WK, Dillier N (2014) Sound localization with bilateral cochlear implants in noise: How much do head movements contribute to localization? Cochlear Implants International , 15(1) 36-42

Müller-Deile, Joachim; Neben, Nicole; Dillier, Norbert; Büchner, Andreas; Mewes, Alexander; Junge, Friederike; Lai, Waikong; Schuessler, Mark; Hey, Matthias (2021). Comparisons of electrophysiological and psychophysical fitting methods for cochlear implants. International Journal of Audiology:Epub ahead of print.

Sijgers, Leanne; Huber, A M; Tabibi, Sonia; Grosse, Julian; Roosli, Christof; Boyle, Patrick; Koka, Kanthaiah; Dillier, Norbert; Pfiffner, Flurin; Dalbert, Adrian (2022). Predicting Cochlear Implant Electrode Placement Using Monopolar, Three-Point and Four-Point Impedance Measurements. IEEE Transactions on Bio-Medical Engineering:Epub ahead of print.

Sijgers, Leanne; Pfiffner, Flurin; Grosse, Julian; Dillier, Norbert; Koka, Kanthaiah; Röösli, Christof; Huber, Alexander; Dalbert, Adrian (2021). Simultaneous Intra- and Extracochlear

Electrocochleography During Cochlear Implantation to Enhance Response Interpretation. Trends in Hearing, 25:233121652199059.
Simon, Laurent S R; Dillier, Norbert; Wüthrich, Hannes (2020). Comparison of 3D Audio Reproduction Methods Using Hearing Devices. AES Journal, 68(12):899-909.
Tabibi, Sonia; Boulet, Jason; Dillier, Norbert; Bruce, Ian C (2021). Phenomenological model of auditory nerve population responses to cochlear implant stimulation. Journal of Neuroscience Methods, 358:109212.
Tabibi, Sonia; Kegel, Andrea; Lai, Wai Kong; Dillier, Norbert (2017). Investigating the use of a Gammatone filterbank for a cochlear implant coding strategy. Journal of Neuroscience Methods, 277:63-74.
Tabibi, Sonia; Kegel, Andrea; Lai, Wai Kong; Bruce, Ian C; Dillier, Norbert (2019). Measuring temporal response properties of auditory nerve fibers in cochlear implant recipients. Hearing Research, 380:187-196.
Tabibi S, Kegel A, Lai WK, Dillier N (2020) A bio-inspired coding (BIC) strategy for cochlear implants. Hearing Research, doi: https://doi.org/10.1016/j.heares.2020.107885
Tyler, Richard S; Keiner, AJ; Walker, Kurt; Deshpande, Aniruddha K; Witt, Shelley; Killian, Matthijs; Ji, Helena; Patrick, Jim; Dillier, Norbert; van Dijk, Pim; Lai, Wai Kong; Hansen, Marlan R; Gantz, Bruce (2015). A Series of Case Studies of Tinnitus Suppression with Mixed Background Stimuli in a Cochlear Implant. American Journal of Audiology, 24(3):398-410.

Review Articles, Clinical Reports, Conference Proceedings

Brand Y, Senn P, Kompis M, Dillier N, Allum JHJ (2014) Cochlear implantation in children and adults in Switzerland. Swiss Med Wkly;144:w13909, pp 1-9
Giurda R, Simon LSR, Wüthrich H, Dillier N (2019) Evaluation of an ILD-based hearing device algorithm using Virtual Sound Environments. Proc. 23rd International Congress on Acoustics, Aachen, Germany
Kegel, Andrea; Giroud, Nathalie; Meyer, Martin; Dillier, Norbert (2017). Differences in Supra-Threshold Auditory Function in young and elderly normal hearing Adults. In: 20. Jahrestagung der Deutschen Gesellschaft für Audiologie, Aalen, 22 Februar 2017 - 25 Februar 2017.
Mudry, Albert; Huber, Alexander; Eckhard, Andreas; Veraguth, Dorothe; Spillmann, Thomas; Röösli, Christof; Dillier, Norbert; Pfiffner, Flurin; Gysin, Claudine; Schmid, Stephan; Gerhard, Huber; Bohlender, Jörg; Holzmann, David; Soyka, Michael; Probst, Rudolf; Ott, Peter; Wettstein, Vincent; Peter-Siegrist, Nicole (2017). Zurich Otorhinolaryngology, Head & Neck Surgery Department 1917-2017. Zürich: Chronos Verlag.
Simon, Laurent S R; Wuethrich, Hannes; Dillier, Norbert (2017). Comparison of Higher-Order Ambisonics, Vector- and Distance-Based Amplitude Panning using a hearing device beamformer. In: 4th International Conference on Spatial Audio, Graz, Austria, 7 September 2017 - 10 September 2017.
Simon, Laurent S R; Kegel, Andrea; Wüthrich, Hannes; Dillier, Norbert (2019)3D localization of speech by mildly and moderately hearing-impaired persons in ecological environments. Proc. 23rd International Congress on Acoustics, Aachen, Germany

Complete list: http://www.uzh.ch/orl/lea/people/dillier/dillier.html