




Philipp Zelger, PhD

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Zu meiner Person

Geboren 01.08.1983 in Bruneck

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Akademischer Werdegang

PhD physics

9/2017 - 12/2020 Leopold-Franzens-Universität
und medizinische Universität Innsbruck

Title *Three-dimensional single molecule localization close to the coverslip*

MSc quantum physics

9/2015 - 5/2017 Leopold-Franzens-Universität Innsbruck,

23.07.2011 Master thesis

Title *Holografische Methoden in der Mikroskopie*

BSc Physics

9/2012 - 7/2015 Leopold-Franzens-Universität Innsbruck

06.2015 Bachelor thesis

Title *Supraleitende Quantenschaltkreise*

Zertifikatstudiengang: Medizinische Physik und Technik

9/2021 - 09/2023 TU Kaiserslautern

Berufliche Erfahrung

7/1999 - 9/2012 Arbeit als Fliesenleger und Baustellenleitung

8/2017 - 11/2020 Prä-doc an der medizinischen Universität Innsbruck
Department für Biomedizinische Physik

9/2020 - Post-doc an der medizinischen Universität Innsbruck
Universitätsklinik für Hör-, Stimm- und Sprachstörungen

Weiteres

- Klinische Erfahrungen - Fitting von Hörimplantaten (Cochlear Implantate, Aktive Mittelohrimplantate, Knochenleitungsimplantate)
- Intraoperative Messungen
- Forschung - Design und Umsetzung von audiologischen Studien
- Design und Umsetzung von Neuroaudiologischen Studien mittels Elektroenzephalographie, funktioneller Nahinfrarotspektroskopie und Eye-trackern
- Grants BMBWF Funding for digital infrastructure: Entwicklung der Camera Silenta in ein neuroaudiologisches Forschungslabor 432.500 € (in Kollaboration mit ass. Prof. Dr. Sonja Rossi)
- Teaching - HNO Praktikum, medizinische Universität Innsbruck (2020 -)
- Mathematics III (Numerical Methods) Management Center Innsbruck (2021)
- Artificial Intelligence in Medicine, Medical University Innsbruck (2023 -)
- Betreuung von Diplom - und Masterarbeiten, medizinische Universität Innsbruck (2018 -)

Ehrenamtliche Tätigkeiten

- 2005-2017 Ehrenamtlicher Sanitäter
Weißes Kreuz Ahrntal
- 2009-2015 Leiter der Jugendgruppe und Ausschussmitglied
Weißes Kreuz Ahrntal

Sprachen

- German Muttersprache
Italian fließend
English fließend

Konferenzbeiträge

- SPIE Optical Metrology 2017 in Munich:
An all-holographic interferometer for phase contrast imaging
- ÖGMPT 2018:
Three-dimensional localization microscopy using deep learning (poster presentation)
- FOM 2019 in London:
Deep learning in single-molecule microscopy (poster presentation)
- WCA 2022 in Warsaw:
Sound Localization in Bimodal Listeners using a Hearing Aid and Contralateral a Cochlear Implant
- DGA 2022 in Erfurt:
Einfluss des Hörverlustes am Hörgeräteohr auf die zeitliche Synchronisation von Hörgerät und Cochlea Implantat
- DGA 2023 in Köln:
Ein Konzept zur Quantifizierung der subjektiven Lautheitswahrnehmung durch objektive Parameter der Gehirnaktivität
- EFAS 2023 Sibenik:
An approach to quantify subjective loudness perception by objective brain measures
- CI 2024 Las Palmas:
The Effect of a Notch Filter in Sound Pre-processing of Active Middle Ear Implants on Speech Perception
- DGA 2024 Aalen:
Attention basierte Deep Learning Netzwerke zur Detektion der akustischen Unbehaglichkeitsschwelle in EEG Messungen
Kopfbewegungen im Fokus: Wie Headtracking den Richtungshörtest bei Kindern optimieren kann
- WCA 2024 Paris:
Objective brain measures to detect uncomfortable loudness levels for improving the fitting process of cochlear implants

Innsbruck, September 30, 2024

Publikationsliste

1. Zelger, P. *et al.* Localization of low and high frequency sounds in cochlear implant recipients using a contralateral hearing aid. *Otology & Neurotology* (2023).
2. Lindtner, R. *et al.* Comparison of Mid-Infrared Handheld and Benchtop Spectrometers to Detect *Staphylococcus epidermidis* in Bone Grafts. *Bioengineering* **10**. ISSN: 2306-5354. <https://www.mdpi.com/2306-5354/10/9/1018> (2023).
3. Santer, M. *et al.* Radiomic Assessment of Radiation-Induced Alterations of Skeletal Muscle Composition in Head and Neck Squamous Cell Carcinoma within the Currently Clinically Defined Optimal Time Window for Salvage Surgery—A Pilot Study. *Cancers* **15**, 4650. <https://doi.org/10.3390/cancers15184650> (2023).
4. Santer, M. *et al.* Defining an Optimal Time Window for Salvage Surgery: Primary Radiochemotherapy Does Not Induce Radiomically Assessable Short-Term Alterations of Skeletal Muscle Composition in Head and Neck Squamous Cell Carcinoma. <https://doi.org/10.20944/2Fpreprints202309.0068.v1> (2023).
5. Franke-Triege, A. *et al.* Stapedius reflex thresholds obtained in a free sound field as an indicator for over- and understimulation in cochlear implant listeners. *International Journal of Audiology*, 1–8. <https://doi.org/10.1080/2F14992027.2023.2245141> (2023).
6. Fodor, M. *et al.* Prediction of Biliary Complications After Human Liver Transplantation Using Hyperspectral Imaging and Convolutional Neural Networks: A Proof-of-concept Study. *Transplantation*. <https://doi.org/10.1097/2Ftp.0000000000004757> (2023).
7. Zelger, P. *et al.* Deep learning analysis of mid-infrared microscopic imaging data for the diagnosis and classification of human lymphomas. *Journal of Biophotonics*. <https://doi.org/10.1002/2Fjbio.202300015> (2023).
8. Woess, C. *et al.* Raman spectroscopy for postmortem interval estimation of human skeletal remains: A scoping review. *Journal of Biophotonics* **16**. <https://doi.org/10.1002/2Fjbio.202300189> (2023).
9. Dejaco, D. *et al.* The influence of intraoperative auditory brainstem responses on vibroplasty coupling-quality and analysis of the impact of different fixation steps on the coupling. *European Archives of Oto-Rhino-Laryngology*. <https://doi.org/10.1007/2Fs00405-023-08103-9> (2023).
10. Brunner, A. *et al.* Visible- and near-infrared hyperspectral imaging for the quantitative analysis of PD-L1 cells in human lymphomas: Comparison with fluorescent multiplex immunohistochemistry. *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy* **285**, 121940. <https://doi.org/10.1016/2Fj.saa.2022.121940> (2023).
11. Weichbold, V., Zelger, P., Galvan, O. & Muigg, F. 5-Year Observation Period of Quality of Life After Cochlear Implantation. *Otology & Neurotology* **44**, e155–e159. <https://doi.org/10.1097/2Fmao.0000000000003809> (2023).
12. Sprinzel, G. *et al.* Multicentric study on surgical information and early safety and performance results with the Bonebridge BCI 602: an active transcutaneous bone conduction hearing implant. *European Archives of Oto-Rhino-Laryngology* **280**, 1565–1579. <https://doi.org/10.1007/2Fs00405-022-07792-y> (2023).
13. Seebacher, J. *et al.* Improving Spatial Hearing when Wearing Ski Helmets in Order to Increase Safety on Ski Slopes. *International Journal of Environmental Research and Public Health* **19**, 15905. <https://doi.org/10.3390/2Fijerph192315905> (2022).

14. Schmidt, V.-M. *et al.* Application of Micro-Computed Tomography for the Estimation of the Post-Mortem Interval of Human Skeletal Remains. *Biology* **11**, 1105. <https://doi.org/10.3390%2Fbiology11081105> (2022).
15. Stock, K. *et al.* Outcomes of distal ulna locking plate in management of unstable distal ulna fractures: a prospective case series. *Archives of Orthopaedic and Trauma Surgery* **143**, 3137–3144. <https://doi.org/10.1007%2Fs00402-022-04549-4> (2022).
16. Schmidt, V. M. *et al.* Post-Mortem Interval of Human Skeletal Remains Estimated with Handheld NIR Spectrometry. *Biology* **11**, 1020. <https://doi.org/10.3390%2Fbiology11071020> (2022).
17. Wurm, A. *et al.* Raman microscopic spectroscopy as a diagnostic tool to detect Staphylococcus epidermidis in bone grafts. *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy* **280**, 121570. <https://doi.org/10.1016%2Fj.saa.2022.121570> (2022).
18. Fodor, M. *et al.* Hyperspectral Imaging as a Tool for Viability Assessment During Normothermic Machine Perfusion of Human Livers: A Proof of Concept Pilot Study. *Transplant International* **35**. <https://doi.org/10.3389%2Fti.2022.10355> (2022).
19. Brunner, A. *et al.* Visible and Near-Infrared hyperspectral imaging (HSI) can reliably quantify CD3 and CD45 positive inflammatory cells in myocarditis: Pilot study on formalin-fixed paraffin-embedded specimens from myocard obtained during autopsy. *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy* **274**, 121092. <https://doi.org/10.1016%2Fj.saa.2022.121092> (2022).
20. Hinterer, F. *et al.* Robust and bias-free localization of individual fixed dipole emitters achieving the Cramér Rao bound for applications in cryo-single molecule localization microscopy. *PLOS ONE* **17** (ed Cebecauer, M.) e0263500. <https://doi.org/10.1371%2Fjournal.pone.0263500> (2022).
21. Velas, L. *et al.* Three-Dimensional Single Molecule Localization Microscopy Reveals the Topography of the Immunological Synapse at Isotropic Precision below 15 nm. *Nano Letters* **21**, 9247–9255. <https://doi.org/10.1021%2Facs.nanolett.1c03160> (2021).
22. Zelger, P. *et al.* Three-dimensional single molecule localization close to the coverslip: a comparison of methods exploiting supercritical angle fluorescence. *Biomedical Optics Express* **12**, 802. <https://doi.org/10.1364%2Fboe.413018> (2021).
23. Zelger, P., Bodner, L., Velas, L., Schütz, G. J. & Jesacher, A. Defocused imaging exploits supercritical-angle fluorescence emission for precise axial single molecule localization microscopy. *Biomedical Optics Express* **11**, 775. <https://doi.org/10.1364%2Fboe.375678> (2020).
24. Zelger, P. *et al.* Three-dimensional localization microscopy using deep learning. *Optics Express* **26**, 33166. <https://doi.org/10.1364%2Foe.26.033166> (2018).
25. Bawart, M., Jesacher, A., Zelger, P., Bernet, S. & Ritsch-Marte, M. Modified Alvarez lens for high-speed focusing. *Optics Express* **25**, 29847. <https://doi.org/10.1364%2Foe.25.029847> (2017).
26. Zelger, P. *et al.* Localization of Low-and High-Frequency Sounds in Cochlear Implant Recipients Using a Contralateral Hearing Aid. *Otology & Neurotology*, 10–1097 (2023).
27. Benedikt, S. *et al.* Deep Convolutional Neural Networks Provide Motion Grading for High-Resolution Peripheral Quantitative Computed Tomography of the Scaphoid. *Diagnostics* **14**, 568 (2024).
28. Zelger, P., Seebacher, J., Graf, S. & Rossi, S. Is it too loud? Ask your brain! *NeuroImage* **299**, 120796 (2024).

29. Muigg, F., Zelger, P., Seebacher, J., Schmutzhard, J. & Weichbold, V. W. Does cochlear implantation affect personality of hearing-impaired patients? A five-year follow-up study. *Acta Oto-Laryngologica*, 1–5 (2024).
30. Muigg, F. *et al.* Health-related quality of life in vibrant soundbridge patients: generic and specific measures, short-term and long-term outcomes. *European Archives of Oto-Rhino-Laryngology*, 1–7 (2024).
31. Zelger, P. *et al.* The Influence of a Notch Filter in Sound Pre-processing on Audiological Performance of Active Middle Ear Implant Users. *Otology & Neurotology* (under review).