

List of Publications

Bibliometrics

Publications (with peer-review): 61

Citations: 2215

H-Index: 27

I10-Index: 47 (google scholar, 05.08.2025)

Original Papers

First Author (inclusive contributed equally)

Number: 13

Schilling, A., Gerum, R., Boehm, C., Rasheed, J., Metzner, C., Maier, A., ... & Krauss, P. (2024). Deep learning based decoding of single local field potential events. *NeuroImage*, 120696.

Schilling, A.*, Choi, B.*, Parameshwarappa, V., & Norena, A. J. (2023). Offset responses in primary auditory cortex are enhanced after notched noise stimulation. *Journal of Neurophysiology*, 129(5), 1114-1126.

Schilling, A.*, Tziridis, K.*, Schulze, H., & Krauss, P. (2023). Behavioral Assessment of Zwicker Tone Percepts in Gerbils. *Neuroscience*, 520, 39-45.

Schilling, A., Krauss P., (2022). Tinnitus is associated with improved cognitive performance and speech perception - Can stochastic resonance explain? *Frontiers in Aging Neuroscience*

Schilling, A., Gerum, R., Metzner, C., Maier, A., & Krauss, P. (2022). Intrinsic noise improves speech recognition in a computational model of the auditory pathway. *Frontiers in Neuroscience*, 795.

Schilling, A., Maier, A., Gerum, R., Metzner, C., & Krauss, P. (2021). Quantifying the separability of data classes in neural networks. *Neural Networks*, 139, 278-293.

Schilling, A., Tomasello, R., Henningsen-Schomers, M. R., Zankl, A., Surendra, K., Haller, M., ... & Krauss, P. (2021). Analysis of continuous neuronal activity evoked by natural speech with computational corpus linguistics methods. *Language, Cognition and Neuroscience*, 36(2), 167-186.

Schilling, A., Krauss, P., Hannemann, R., Schulze, H., & Tziridis, K. (2021). Reduktion der Tinnituslautstärke: Pilotstudie zur Abschwächung von tonalem Tinnitus mit schwellennahem, individuell spektral optimiertem Rauschen. *HNO*, 69(11), 891.

Schilling, A., Gerum, R., Krauss, P., Metzner, C., Tziridis, K., & Schulze, H. (2019). Objective estimation of sensory thresholds based on neurophysiological parameters. *Frontiers in neuroscience*, 13, 481.

Schilling, A., Krauss, P., Gerum, R., Metzner, C., Tziridis, K., & Schulze, H. (2017). A new statistical approach for the evaluation of gap-prepulse inhibition of the acoustic startle reflex (GPIAS) for tinnitus assessment. *Frontiers in behavioral neuroscience*, 11, 198.

Wagener, V.*, **Schilling, A.***, Mainka, A., Hennig, D., Gerum, R., Kelch, M. L., ... & Virtanen, S. (2016). Cell adhesion on surface-functionalized magnesium. *ACS Applied Materials & Interfaces*, 8(19), 11998-12006.

Bonakdar, N.*, **Schilling, A.***, Spörrer, M., Lennert, P., Mainka, A., Winter, L., ... & Goldmann, W. H. (2015). Determining the mechanical properties of plectin in mouse myoblasts and keratinocytes. *Experimental cell research*, 331(2), 331-337.

Bonakdar, N.*, **Schilling, A.***, Lennert, P., Spörrer, M., Gerum, R. C., Alonso, J. L., & Goldmann, W. H. (2014). Measuring mechanical properties in cells: three easy methods for biologists. *Cell biology international*, 38(10), 1227-1232.

(* contributed equally)

Senior Author

Number: 7

Kölbl, N., Tziridis, K., Krauss, P., & **Schilling, A.** (2024). Methodological Considerations in the Analysis of Acoustically Evoked Neural Signals: A Comparative Study of Active EEG, Passive EEG and MEG. In *2024 46th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, pp. 1-7). IEEE.

Stoll, A., Maier, A., Krauss, P., Gerum, R., & **Schilling, A.** (2023). Coincidence detection and integration behavior in spiking neural networks. *Cognitive Neurodynamics*, 1-13.

Gerum, R., Erpenbeck, A., Krauss, P., & **Schilling, A.** (2023, June). Leaky-Integrate-and-Fire Neuron-Like Long-Short-Term-Memory Units as Model System in Computational Biology. In *2023 International Joint Conference on Neural Networks (IJCNN)* (pp. 1-9). IEEE.

Gerum, R. C., & **Schilling, A.** (2021). Integration of leaky-integrate-and-fire neurons in standard machine learning architectures to generate hybrid networks: A surrogate gradient approach. *Neural Computation*, 33(10), 2827-2852.

Krauss, P., Metzner, C., Joshi, N., Schulze, H., Traxdorf, M., Maier, A., & **Schilling, A.** (2021). Analysis and visualization of sleep stages based on deep neural networks. *Neurobiology of sleep and circadian rhythms*, 10, 100064.

Gerum, R. C., Erpenbeck, A., Krauss, P., & **Schilling, A.** (2020). Sparsity through evolutionary pruning prevents neuronal networks from overfitting. *Neural Networks*, 128, 305-312.

Gerum, R., Rahlfs, H., Streb, M., Krauss, P., Grimm, J., Metzner, C., ... & **Schilling, A.** (2019). Open (G) PIAS: An open-source solution for the construction of a high-precision acoustic startle response setup for tinnitus screening and threshold estimation in rodents. *Frontiers in behavioral neuroscience*, 13, 140.

Co-Author

Number: 35

Metzner, C., **Schilling, A.**, Maier, A., & Krauss, P. (2025). Nonlinear neural dynamics and classification accuracy in reservoir computing. *Neural Computation*, 1-36.

Tziridis, K., Neubert, B., Seehaus, A., Krauss, P., **Schilling, A.**, Brüggemann, P., ... & Schulze, H. (2025). Correlation of non-auditory comorbidities and hearing loss in chronic subjective tinnitus patients: a retrospective database study. *Frontiers in Neurology*, 16, 1596274.

Ramezani, P., **Schilling, A.**, & Krauss, P. (2025). Analysis of argument structure constructions in a deep recurrent language model. *Frontiers in Computational Neuroscience*, 19, 1474860.

Stoewer, P., **Schilling, A.**, Ramezani, P., Kissane, H., Maier, A., & Krauss, P. (2025). Multi-modal cognitive maps for language and vision based on neural successor representations. *Neurocomputing*, 631, 129662.

Ramezani, P., **Schilling, A.**, & Krauss, P. (2025). Analysis of argument structure constructions in the large language model BERT. *Frontiers in Artificial Intelligence*, 8, 1477246.

Metzner, C., **Schilling, A.**, Maier, A., & Krauss, P. (2024). Recurrence resonance-noise-enhanced dynamics in recurrent neural networks. *Frontiers in Complex Systems*, 2, 1479417.

Tziridis, K., Maul, A., Rasheed, J., Krauss, P., **Schilling, A.**, & Schulze, H. (2024). Tinnitus is associated with increased extracellular matrix density in the auditory cortex of Mongolian gerbils. *BMC neuroscience*, 25(1), 1-12.

Schüller, A., **Schilling, A.**, Krauss, P., & Reichenbach, T. (2024). The Early Subcortical Response at the Fundamental Frequency of Speech Is Temporally Separated from Later Cortical Contributions. *Journal of Cognitive Neuroscience*, 36(3), 475-491.

Metzner, C., Yamakou, M. E., Voelkl, D., **Schilling, A.**, & Krauss, P. (2024). Quantifying and maximizing the information flux in recurrent neural networks. *Neural Computation*, 36(3), 351-384.

Stöwer, P., **Schilling, A.**, Maier, A., & Krauss, P. (2023, November). Conceptual cognitive maps formation with neural successor networks and word embeddings. In *2023 IEEE International Conference on Development and Learning (ICDL)* (pp. 391-395). IEEE.

Schüller, A., **Schilling, A.**, Krauss, P., Rampp, S., & Reichenbach, T. (2023). Attentional modulation of the cortical contribution to the frequency-following response evoked by continuous speech. *Journal of Neuroscience*, 43(44), 7429-7440.

Koelbl, N., **Schilling, A.**, & Krauss, P. (2023, June). Adaptive ICA for Speech EEG Artifact Removal. In *2023 5th International Conference on Bio-engineering for Smart Technologies (BioSMART)* (pp. 1-4). IEEE.

Metzner, C., **Schilling, A.**, Traxdorf, M., Schulze, H., Tziridis, K., & Krauss, P. (2023). Extracting continuous sleep depth from EEG data without machine learning. *Neurobiology of Sleep and Circadian Rhythms*, 14, 100097.

Stoewer, P., **Schilling, A.**, Maier, A., & Krauss, P. (2023). Neural network based formation of cognitive maps of semantic spaces and the putative emergence of abstract concepts. *Scientific Reports*, 13(1), 3644.

Metzner, C., **Schilling, A.**, Traxdorf, M., Tziridis, K., Maier, A., Schulze, H., & Krauss, P. (2022). Classification at the accuracy limit: facing the problem of data ambiguity. *Scientific Reports*, 12(1), 22121.

Garibyan, A., **Schilling, A.**, Boehm, C., Zankl, A., & Krauss, P. (2022). Neural correlates of linguistic collocations during continuous speech perception. *Frontiers in Psychology*, 13, 1076339.

Issler, N., Afonso, S., Weissman, I., Jordan, K., Cebrian-Serrano, A., Meindl, K., ... & Warth, R. (2022). A founder mutation in EHD1 presents with tubular proteinuria and deafness. *Journal of the American Society of Nephrology*, 33(4), 732-745.

Tziridis, K., Brunner, S., **Schilling, A.**, Krauss, P., & Schulze, H. (2022). Spectrally matched near-threshold noise for subjective tinnitus loudness attenuation based on stochastic resonance. *Frontiers in Neuroscience*, 347.

Stoewer, P., Schlieker, C., **Schilling, A.**, Metzner, C., Maier, A., & Krauss, P. (2022). Neural network based successor representations to form cognitive maps of space and language. *Scientific Reports*, 12(1), 1-13.

Jeschke, M., Happel, M. F., Tziridis, K., Krauss, P., **Schilling, A.**, Schulze, H., & Ohl, F. W. (2021). Acute and long-term circuit-level effects in the auditory cortex after sound trauma. *Frontiers in Neuroscience*, 1369.

Tziridis, K., Forster, J., Buchheidt-Dörfler, I., Krauss, P., **Schilling, A.**, Wendler, O., ... & Schulze, H. (2021). Tinnitus development is associated with synaptopathy of inner hair cells in Mongolian gerbils. *European Journal of Neuroscience*, 54(3), 4768-4780.

Metzner, C., **Schilling, A.**, Traxdorf, M., Schulze, H., & Krauss, P. (2021). Sleep as a random walk: a super-statistical analysis of EEG data across sleep stages. *Communications Biology*, 4(1), 1-11.

Krauss, P.; Schuster, M.; Dietrich, V.; **Schilling, A.**; Schulze, H.; Metzner, C. (2019) Weight statistics controls dynamics in recurrent neural networks. *PLoS ONE*, 14(4): e0214541.

Traxdorf, M., Krauss, P., **Schilling, A.**, Schulze, H., & Tziridis, K. (2019). Microstructure of cortical activity during sleep reflects respiratory events and state of daytime vigilance. *Somnologie*, 23(2), 72-79.

Spörrer, M., Prochnicki, A., Regine C. Tölle, Alexander Nyström, Philipp R. Esser, Melanie Homberg, Ioannis Athanasiou, Eleni Zingkou, **Achim Schilling**, Richard Gerum, Ingo Thievensen, Lilli Winter, Leena Bruckner-Tuderman, Ben Fabry, Thomas M. Magin, Jörn Dengjel, Rolf Schröder, Dimitra Kiritsi (2019) Treatment of keratinocytes with 4-phenylbutyrate in epidermolysis bullosa: lessons for therapies in keratin disorders. *EBioMedicine*, 44, 502-515.

Krauss, P., Prebeck, K., **Schilling, A.**, & Metzner, C. (2019). Recurrence resonance" in three-neuron motifs. *Frontiers in computational neuroscience*, 13, 64.

Krauss, P., Zankl, A., **Schilling, A.**, Schulze, H., & Metzner, C. (2019). Analysis of structure and dynamics in three-neuron motifs. *Frontiers in Computational Neuroscience*, 13, 5.

Dierich, M., Hartmann, S., Dietrich, N., Moeser, P., Brede, F., Johnson Chacko, L., Tziridis, K., Schilling, A., Krauss, P., Hessler, S., Karch, S., Schrott-Fischer, A., Blumer, M., Birchmeier, C., Oliver, D., Moser, T., Schulze, H., Alzheimer, C., Leitner, M. & Huth, T. (2019). β -secretase BACE1 is required for normal cochlear function. *Journal of Neuroscience*, 39(45), 9013-9027.

Krauss, P., Metzner, C., **Schilling, A.**, Tziridis, K., Traxdorf, M., Wollbrink, A., ... & Schulze, H. (2018). A statistical method for analyzing and comparing spatiotemporal cortical activation patterns. *Scientific reports*, 8(1), 1-9.

Krauss, P., **Schilling, A.**, Bauer, J., Tziridis, K., Metzner, C., Schulze, H., & Traxdorf, M. (2018). Analysis of multichannel eeg patterns during human sleep: a novel approach. *Frontiers in human neuroscience*, 12, 121.

Krauss, P., Tziridis, K., **Schilling, A.**, & Schulze, H. (2018). Cross-modal stochastic resonance as a universal principle to enhance sensory processing. *Frontiers in neuroscience*, 12, 578.

Krauss, P., Metzner, C., **Schilling, A.**, Schütz, C., Tziridis, K., Fabry, B., & Schulze, H. (2017). Adaptive stochastic resonance for unknown and variable input signals. *Scientific reports*, 7(1), 1-8.

Gollnast, D., Tziridis, K., Krauss, P., **Schilling, A.**, Hoppe, U., & Schulze, H. (2017). Analysis of audiometric differences of patients with and without tinnitus in a large clinical database. *Frontiers in neurology*, 8, 31.

Krauss, P., Tziridis, K., Buerbank, S., **Schilling, A.**, & Schulze, H. (2016). Therapeutic value of Ginkgo biloba extract EGb 761® in an animal model (*Meriones unguiculatus*) for noise trauma induced hearing loss and tinnitus. *PloS one*, 11(6), e0157574.

Krauss, P., Tziridis, K., Metzner, C., **Schilling, A.**, Hoppe, U., & Schulze, H. (2016). Stochastic resonance controlled upregulation of internal noise after hearing loss as a putative cause of tinnitus-related neuronal hyperactivity. *Frontiers in neuroscience*, 10, 597.

Lautscham, L. A., Kämmerer, C., Lange, J. R., Kolb, T., Mark, C., **Schilling, A.**, ... & Fabry, B. (2015). Migration in confined 3D environments is determined by a combination of adhesiveness, nuclear volume, contractility, and cell stiffness. *Biophysical journal*, 109(5), 900-913.

Reviews

First Author

Number: 4

Schilling, A., & Krauss, P. (2024). The Bayesian brain: world models and conscious dimensions of auditory phantom perception. *Journal of Neurophysiology*, 132(2), 317-318. (Editorial Focus)

Schilling, A., Sedley, W., Gerum, R., Metzner, C., Tziridis, K., Maier, A., ... & Krauss, P. (2023). Predictive coding and stochastic resonance as fundamental principles of auditory phantom perception. *Brain*, awad255.

Schilling, A., Schaette, R., Sedley, W., Gerum, R. C., Maier, A., & Krauss, P. (2023). Auditory perception and phantom perception in brains, minds and machines. *Frontiers in Neuroscience*, 17, 1293552. (Editorial)

Schilling, A., Tziridis, K., Schulze, H., & Krauss, P. (2021). The Stochastic Resonance model of auditory perception: A unified explanation of tinnitus development, Zwicker tone illusion, and residual inhibition. *Progress in brain research*, 262, 139-157.

Co-Author

Number: 2

Schulze, H., **Schilling, A.**, Krauss, P., & Tziridis, K. (2023). The Erlangen model of tinnitus development-New perspective and treatment strategy. *HNO*, 71(10), 662-668.

Krauss, P.; **Schilling, A.**; Tziridis, K.; Schulze, H. (2019) Modelle der Tinnitusentstehung - Von der Cochlea zum Kortex. *HNO* 67:172–177.

Book chapters

Number: 1

Bonakdar, N., **Schilling, A.**, Gerum, R., Alonso, J. L., & Goldmann, W. H. (2016). Innovations in measuring cellular mechanics. In *Vascular Engineering* (pp. 267-281). Springer, Tokyo.