Stefan A. Wirler

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Stefan-Wirler-2

Research Interests

Spatial Audio Processing, Microphone Array Processing, Beamforming, Audio Signal Processing, Room Acoustics Modeling, Machine Learning, Virtual Acoustics Perception

Education

Aalto University **Espoo, Finland**
D.Sc.(Tech) / PhD Acoustics and Audio Signal Processing *2020–present*
Department of Information and Communications Engineering, Acoustics Lab
Supervisor: Prof. Ville Pulkki

Friedrich-Alexander-University (FAU) **Erlangen, Germany**
M.Sc. Electrical Engineering, Grade: 1.5 – "Very Good" – *90/100* *2016–2019*
Thesis: *Impact of Diffuse and Disturbed Reflections on Room Geometry Inference Algorithms*
International Audio Laboratories Erlangen - Joint Institution of Fraunhofer IIS and FAU

Regensburg University of Applied Science **Regensburg, Germany**
B.Eng. Electrical Engineering, Grade: 1.8 - "Good" – *84/100* *2012–2016*
Thesis: *Multichannel Room Impulse Response Measurement for the Determination of Room Acoustic Parameters*
Electrocacoustics Lab, Regensburg University of Applied Science

Experience

AAC Technologies **Turku, Finland**
Project Employee *2021–2023*
Microphone array design, implementation of beamforming algorithms and development of parametric time-frequency domain spatial post-filtering algorithms for hand-held devices (MATLAB)

Aalto University **Espoo, Finland**
Research Assistant *2020*
Implementation of a real-time binaural rendering system for the evaluation of virtual acoustic perception (Max/MSP)

Fraunhofer IIS **Erlangen, Germany**
Graduate Research Assistent *2019*
Implementation of FDN reverberation algorithms for the evaluation and comparison to real-world recordings (MATLAB)

FAU **Erlangen, Germany**
Research Internship *2018*
Implementation and extension of an independent vector analysis algorithm to support block-online processing (Python)

National Instruments Germany GmbH — **Munich, Germany**
Application Engineering Intern — *2014–2015*

Others

Aalto University — **Espoo, Finland**
Teaching Assistant, Acoustics and Physics of Sound — *2021–present*

Aalto University — **Espoo, Finland**
Thesis Advisor
Master Thesis
"Real-time Implementation and Evaluation of Acoustic Occlusion in Virtual Reality", Andrés Ortiz Pachón, 2021
"Evaluation of Pair-Wise Similarity Spotforming Algorithm on Real Omnidirectional Signals and Ambisonic Signals with Search for Improvements on the Algorithm", Antoine Souchaud, 2024

Computer skills

■■■■■	MATLAB	■■■□□	Max/MSP
■■■□□	Python	■■□□□	Assembler
■■□□□	C	■■□□□	VHDL
■■□□□	C++	■■■□□	LabVIEW

Publications

[1] **Wirler, Stefan**, Nils Meyer-Kahlen, and Sebastian J Schlecht. **Towards transfer-plausibility for evaluating mixed reality audio in complex scenes**. In *Audio Engineering Society Conference: 2020 AES International Conference on Audio for Virtual and Augmented Reality*. Audio Engineering Society, 2020.

[2] **Wirler, Stefan**, Sebastian J Schlecht, and Ville Pulkki. **Machine learning based auralization of rigid sphere scattering**. In *2021 Immersive and 3D Audio: from Architecture to Automotive (I3DA)*. IEEE, 2021.

[3] **Wirler, Stefan** and Ville Pulkki. **Spatial post-filter estimation based on low-order beamformers**. In *International Congress on Acoustics*. Acoustical Society of Korea (ASK), 2022.

[4] **Wirler, Stefan**, Vasileios Bountourakis, and Ville Pulkki. **Space-domain cross-pattern coherence post-filter for speech enhancement with linear microphone arrays**. In *Audio Engineering Society Convention 154*. Audio Engineering Society, 2023.

[5] **Wirler, Stefan**, Nils Meyer-Kahlen, and Ville Pulkki. **Enhancing Spatial Post-Filters through Non-Linear Combinations**. In *Audio Engineering Society Convention 157*. Audio Engineering Society, 2024.

[6] **Wirler Stefan** and Ville Pulkki. **Spatially Selective Sound Capture Based on Aggregated Pair-Wise Similarity Measures**. *Journal of Audio Engineering Societ*, 2025. **[Accepted for Publication]**.

[7] **Wirler, Stefan**, Nils Meyer-Kahlen, and Ville Pulkki. **Synthesizing a Virtual Height Channel from Planar Microphone Arrays**. In *EUSIPCO*, 2025. **[Accepted for Publication]**.

[8] Nils Meyer-Kahlen, Daniel Rudrich, Manuel Brandner, **Wirler, Stefan**, Simon Windtner, and Matthias Frank. **Diy modifications for acoustically transparent headphones**. In *Audio Engineering Society Convention 148*. Audio Engineering Society, 2020.