

# 郭振宇

## ZHENYU GUO



### INFORMATION

Birth Date: 1996.06.20  
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### CONTACT

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Doctoral candidate in architectural acoustics. With a long-term background in mathematics and physics. Researching on spatial sound reproduction and auralization. Possesses rich interdisciplinary (electronic engineering, acoustics, auditory, architecture) learning and practical experience. Proficient in acoustic signal processing, acoustic measurement and acoustic experiment design. Familiar with implementation of audio algorithms, acoustic simulation, statistical analysis and machine learning. Has extensive programming experience in MATLAB, Python, C/C++.

### Education

2024 – 2025	<b>Technical University of Munich</b> , School of Computing, Information and Technology Visiting PhD <i>Audio Information Processing</i> Supervisor: Prof. Bernhard U. Seeber
2020 – Now	<b>South China University of Technology</b> , School of Architecture PhD candidate <i>Building science and technology</i> Supervisor: Prof. Yuezhe Zhao
2018 – 2020	<b>South China University of Technology</b> , School of Physics and Optoelectronics Master <i>Acoustics.</i> Supervisor: Prof. Yigang Lu Associate supervisor: Prof. Guangzheng Yu
2014 – 2018	<b>Guangdong University of Technology</b> , School of Physics and Optoelectronic Engineering Bachelor <i>Electronic Science and Technology</i>

### PUBLICATIONS

#### Journal papers

- **(SCI Q2 First author) Guo, Z.**, Lu, Y., Zhou, H., Li, Z., Fan, Y., and Yu, G. (2021). “Anthropometric-based clustering of pinnae and its application in personalizing HRTFs,” *International Journal of Industrial Ergonomics*, 81, 103076. doi:10.1016/j.ergon.2020.103076
- **(SCI Q1 First author) Guo, Z.**, Yu, G., Zhou, H., Wang, X., Lu, Y., and Meng, Q. (2021). “Utilizing True Wireless Stereo Earbuds in Automated Pure-Tone Audiometry,” *Trends Hear*, 25, 23312165211057367. doi:10.1177/23312165211057367
- **(SCI Q1 First author) Guo, Z.**, Zhao, Y., Wang, L., Chu, Y., and Yu, G. (2023). “Distance discrimination thresholds of proximal sound sources in a real anechoic environment,” *Applied Acoustics*, 203, 109223. doi:10.1016/j.apacoust.2023.109223
- **(SCI Q1 Co-first author) Shi, X., Guo, Z.**, and Zhao, Y. (2024). “Influence of virtual audio system on psychological restoration effects of soundscapes: Investigating water sounds of a Chinese classical garden,” *Applied Acoustics*, 221, 109991. doi:10.1016/j.apacoust.2024.109991
- **(SCI Q2 Co-corresponding author) Zhou, H., Zhou, H., Guo, Z.**, and Meng, Q. (2024). “Automated Pure-Tone Audiometry Using True Wireless Stereo Earbuds with Active Noise Control,” *International journal of audiology*
- **(SCI Q2) Zhou, H., Kan, A., Yu, G., Guo, Z.**, Zheng, N., and Meng, Q. (2022). “Pitch Perception With the Temporal Limits Encoder for Cochlear Implants,” *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 30, 2528 – 2539. Presented at the IEEE Transactions on Neural Systems and Rehabilitation Engineering. doi:10.1109/TNSRE.2022.3203079

#### Conferences

- 2019 EAA Spatial Audio Signal Processing Symposium Guo, Z., Lu, Y., Wang, L., & Yu, G. (2019). Discrimination experiment of sound distance perception for a real source in near-field. 85–89. <https://doi.org/10.25836/sasp.2019.25>

## Conferences

- 2022 The 24th International Congress on Acoustics: Guo, Z., Zhou, H., & Zhao, Y. (2022). Evaluating speech intelligibility degradation under different orders of Ambisonics. 24th International Congress on Acoustics, Gyeongju
- 2019 EAA Spatial Audio Signal Processing Symposium Guo, Z., Lu, Y., Wang, L., & Yu, G. (2019). Discrimination experiment of sound distance perception for a real source in near-field. 85–89. <https://doi.org/10.25836/sasp.2019.25>
- 2020 The 179th Meeting of the ASA: Guo, Z., Wang, X., Zhou, H., Lu, Y., Yu, G., & Meng, Q. (2020). Automated pure tone audiometry with true wireless stereos earbuds. *The Journal of the Acoustical Society of America*, 148(4), 2714–2714
- 2022 8th International Conference on Humanities and Social Science Research: Shi, X., Zhao, Y., & Guo, Z. (2022). Comparison Study Between Field and Reproduction Based on Soundscape Restoration Effect. 8th International Conference on Humanities and Social Science Research. <https://doi.org/10.2991/assehr.k.220504.186>
- (Excellent conference paper award) 2019 19th Management Ergonomics of the Chinese Society of Ergonomics Anthropometric parameters-based pinnae clustering and its application in customization of individualized HRTF

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## AWARDS

- 2020 Acoustical Society of America, student conference award
- 2021 South China University of Technology, Longhu Enterprise Scholarship
- 2022 South China University of Technology, Principal's Scholarship
- 2023 South China University of Technology, Principal's Scholarship
- 2023 The second National College Students' Soundscape Design Competition, third prize, first author
- 2023 China Scholarship Council, scholarship for visiting research

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## RESEARCH

Research on spatial sound recording and reproduction and its perception in the acoustic environment of rooms

- Establish a 192-channel high-end Ambisonics sound field auralization system
- Optimization and perceptual evaluation of high-order Ambisonics algorithms

Research on the psychological restorative effect in virtual soundscapes

- Investigation and Design of Soundscape Environment of Lingnan Classical Garden
- Use virtual sound reproduction and VR technology to reproduce virtual soundscapes
- Study the impact of different virtual sound reproduction calculations on the psychological restorative effect of soundscapes

Research on optimization of binaural spatial sound reproduction system

- Measurement of physiological parameters of auricle and HRTF BEM simulation calculation
- Use clustering algorithms for physiological parameter classification and personalized HRTF

Research on hearing health and diagnosis technology

- Establish and evaluate a mobile hearing measurement platform
- Implementation of hearing aid algorithm framework
- Use active noise reduction to achieve measurement of hearing threshold in noisy environments

Auditory perception research

- Establish a moving sound source test platform to measure the near-field auditory distance discrimination threshold.
- Measure the speech recognition threshold of sound sources in virtual sound space.

Measurement and evaluation of architectural acoustic environment

- Measurement and optimization project of indoor acoustic environment of cinemas
- Participated in the measurement and evaluation project of the impact of road noise on the acoustic environment of surrounding buildings.

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## OTHERS

- 2019 South China University of Technology, Undergraduate course, Electronic Technology Internship, Teaching Assistant
  - 2021 South China University of Technology, Undergraduate course, Architectural Physics, Teaching Assistant
  - 2024 Technical University of Munich, Graduate course, Topics in Audio Information Processing Research, Teaching Assistant
  - 2024 University of Oldenburg, Machine Learning & Numerics for Acoustics, Summer Camp
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