

# Jiaxin (Jay) Zhong

## Post-Doc in Acoustics at Penn State University

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## Research Interests

- Active Metamaterial
- Active Noise Control (ANC)
- Audio Signal Processing
- Computational Acoustics
- Parametric Array Loudspeaker (PAL)

## Employment

### Post-Doc

🏛️ **Penn State University**    📅 Dec-2022 – Ongoing    📍 University Park  
👤 Advisor: **Dr. Yun Jing**

## Education

### Ph.D. in Acoustics

🏛️ **University of Technology Sydney**    📅 Mar-2019 – Aug-2022    📍 Sydney, Australia  
👤 Advisors: Prof. Ray Kirby, Dr. Mahmoud Karimi, Prof. Xiaojun Qiu  
📄 *Parametric Array Loudspeakers and Applications in Active Noise Control*

### M.Sc. in Acoustics

🏛️ **Nanjing University**    📅 Sep-2015 – Jun-2018    📍 Nanjing, China  
👤 Advisors: Dr. Jiancheng Tao, Prof. Xiaojun Qiu  
📄 *Effects of a Finite Size Reflecting Disk on Sound Power Measurements*

### B.Sc. in Acoustics

🏛️ **Nanjing University**    📅 Sep-2011 – Jun-2015    📍 Nanjing, China  
👤 Advisor: Prof. Xinlong Wang  
📄 *The Study of Matching Layers for Ultrasonic Transducers*

## Honors & Awards

- ICA-ASA Young Scientist Conference Attendance Grant**  
International Commission for Acoustics (ICA) with Acoustical Society of America (ASA)  
📅 24-Oct-2022
- Young Professional Grant**  
International Institute of Noise Control Engineering (I-INCE)  
📅 23-Aug-2020
- Australian Research Council (ARC) Linkage Scholarship**  
University of Technology Sydney  
📅 12-Jun-2020
- Tech Lab Staff and Student Committee HDR Collaboration Grant**  
University of Technology Sydney  
📅 18-Oct-2019

# Publications



Below you can find a list of my academic publications, along with links to DOI and PDF downloads.

Bold author: **self**. “\*”: corresponding author. Underline author: students under the supervision of Dr. Jiaxin Zhong.








## Books

- [B1] **Jiaxin Zhong** and Xiaojun Qiu, “Acoustic Waves Generated by Parametric Array Loudspeakers,” CRC Press, In preparation (2023).

## Journal Articles

- [J19] **Jiaxin Zhong**, Haishan Zou, Jing Lu, and Dong Zhang\*, “A modified convolution model for calculating the far field directivity of a parametric array loudspeaker,” *J. Acoust. Soc. Am.* Under review (2022).
- [J18] **Jiaxin Zhong**, Tao Zhuang, Ray Kirby, Mahmoud Karimi, Jing Lu, and Dong Zhang\*, “Suppressing grating lobes for a steerable parametric array loudspeaker,” *IEEE Trans. Audio Speech Lang. Process.* Under review (2022).
- [J17] Tao Zhuang, **Jiaxin Zhong**\*, Ray Kirby, Mahmoud Karimi, and Jing Lu, “A steerable non-paraxial Gaussian beam expansion for a steerable parametric array loudspeaker,” *J. Acoust. Soc. Am.* 153(1), 124–136 (2023).
- [J16] **Jiaxin Zhong**, Tao Zhuang, Ray Kirby, Mahmoud Karimi, Xiaojun Qiu, Haishan Zou\*, and Jing Lu, “Low frequency audio sound field generated by a focusing parametric array loudspeaker,” *IEEE Trans. Audio Speech Lang. Process.* 30, 3098–3109 (2022).
- [J15] **Jiaxin Zhong**, Ray Kirby, Mahmoud Karimi, and Haishan Zou\*, “A spherical wave expansion for a steerable parametric array loudspeaker using Zernike polynomials,” *J. Acoust. Soc. Am.* 152(4), 2296–2308 (2022).
- [J14] **Jiaxin Zhong**, Ray Kirby, Mahmoud Karimi, Haishan Zou\*, and Xiaojun Qiu, “Scattering by a rigid sphere of audio sound generated by a parametric array loudspeaker,” *J. Acoust. Soc. Am.* 151(3), 1615–1626 (2022).
- [J13] **Jiaxin Zhong**, Tao Zhuang, Ray Kirby, Mahmoud Karimi, Haishan Zou\*, and Xiaojun Qiu, “Quiet zone generation in a free field with multiple parametric array loudspeakers,” *J. Acoust. Soc. Am.* 151(2), 1235–1245 (2022).
- [J12] **Jiaxin Zhong**, Ray Kirby, Mahmoud Karimi, and Haishan Zou\*, “A cylindrical expansion of the audio sound for a steerable parametric array loudspeaker,” *J. Acoust. Soc. Am.* 150(5), 3797–3806 (2021).
- [J11] **Jiaxin Zhong**\*, Ray Kirby, and Xiaojun Qiu, “The near field, Westervelt far field, and inverse-law far field of the audio sound generated by parametric array loudspeakers,” *J. Acoust. Soc. Am.* 149(3), 1524–1535 (2021).
- [J10] **Jiaxin Zhong**\* and Xiaojun Qiu, “On the spherical expansion for calculating the sound radiated by a baffled circular piston,” *J. Theor. Comput. Acoust.* 2050026 (2020).
- [J9] **Jiaxin Zhong**\*, Shuping Wang, Ray Kirby, and Xiaojun Qiu, “Reflection of audio sounds generated by a parametric array loudspeaker,” *J. Acoust. Soc. Am.* 148(4), 2327–2336 (2020).
- [J8] **Jiaxin Zhong**\*, Shuping Wang, Ray Kirby, and Xiaojun Qiu, “Insertion loss of a thin partition for audio sounds generated by a parametric array loudspeaker,” *J. Acoust. Soc. Am.* 148(1), 226–235 (2020).
- [J7] **Jiaxin Zhong**\*, Ray Kirby, and Xiaojun Qiu, “A spherical expansion for audio sounds generated by a circular parametric array loudspeaker,” *J. Acoust. Soc. Am.* 147(5), 3502–3510 (2020).
- [J6] **Jiaxin Zhong**, Baicun Chen, Jianchen Tao\*, and Xiaojun Qiu, “The performance of active noise control systems on ground with two parallel reflecting surfaces,” *J. Acoust. Soc. Am.* 147(5), 3397–3407 (2020).
- [J5] Shuping Wang\*, **Jiaxin Zhong**, Xiaojun Qiu, and Ian Burnett, “A note on using panel diffusers to improve sound field diffusivity in reverberation rooms below 100 Hz,” *Appl. Acoust.* 169, 107471 (2020).
- [J4] **Jiaxin Zhong**\*, Ray Kirby, and Xiaojun Qiu, “A non-paraxial model for the audio sound behind a non-baffled parametric array loudspeaker (L),” *J. Acoust. Soc. Am.* 147(3), 1577–1580 (2020).
- [J3] **Jiaxin Zhong**, Jiancheng Tao\*, and Xiaojun Qiu, “Increasing the performance of active noise control systems on ground with two vertical reflecting surfaces with an included angle,” *J. Acoust. Soc. Am.* 146(6), 4075–4085 (2019).
- [J2] **Jiaxin Zhong**, Jiancheng Tao\*, and Xiaojun Qiu, “Increasing the performance of active noise control systems on ground with a finite size vertical reflecting surface,” *Appl. Acoust.* 154, 193–200 (2019).
- [J1] **Jiaxin Zhong**, Jiancheng Tao\*, Feng Niu, and Xiaojun Qiu, “Effects of a finite size reflecting disk in sound power measurement,” *Appl. Acoust.* 140, 24–29 (2018).

## Conference Papers

- [C7] **Jiaxin Zhong**, Ray Kirby, Mahmoud Karimi, Xiaojun Qiu, and Jing Lu, "Audio sound field generated by a parametric array loudspeaker in a rectangular room with lightly damped walls," *The 24th International Congress on Acoustics (ICA)*, Gyeongju, Korea, October 24–28, 2022. 
- [C6] **Jiaxin Zhong**, Tong Xiao, Benjamin Halkon, Ray Kirby, and Xiaojun Qiu, "An experimental study on the active noise control using a parametric array loudspeaker," *Inter-Noise 2020*, Seoul, Korea, August 23–26, 2020. 
- [C5] **Jiaxin Zhong**, Jiancheng Tao, and Xiaojun Qiu, "A numerical study on active noise radiation control systems between two parallel reflecting surfaces," *The 18th Asia-Pacific Vibration Conference*, Sydney, Australia, November 18–20, 2019. 
- [C4] Xiaojun Qiu, Qiaoxi Zhu, Shuping Wang, and **Jiaxin Zhong**, "A case study on the new reverberation room built in University of Technology Sydney," *The 23rd International Congress on Acoustics (ICA)*, Aachen, Germany, September 9–13, 2019. 
- [C3] Jiancheng Tao, **Jiaxin Zhong**, and Xiaojun Qiu, "Progress of research on active noise radiation control with reflecting surfaces," *Inter-Noise 2019*, Madrid, Spain, June 16–19, 2019. 
- [C2] **Jiaxin Zhong**, Jiancheng Tao, and Xiaojun Qiu, "Effects of the finite circular baffle size on the sound power measurements," *Inter-Noise 2017*, Hong Kong, China, August 27–30, 2017. 
- [C1] Jiancheng Tao, **Jiaxin Zhong**, and Xiaojun Qiu, "Noise radiation from an AC filter capacitor," *Inter-Noise 2017*, Hong Kong, China, August 27–30, 2017. 


## Professional Activities & Services



### Membership

- Member, **Institute of Electrical and Electronics Engineers (IEEE)**
- Young Professionals, **IEEE**
- Member, **Acoustical Society of America (ASA)**
- Associate Member, **Audio Engineering Society (AES)**

 01-Mar-2022 – Present

 01-Jan-2022 – 31-Dec-2023


 1-Jan-2021 – Present

 27-Jul-2021 – Present


### Reviewer

- **Applied Acoustics**
- **Applied Sciences**
- Asia-Pacific Vibration Conference (APVC)
- **The Journal of the Acoustical Society of America**
- **Wave Motion**

 2020 – Present

 2021 – Present

 2021

 2022 – Present

 2021 – Present