

# Jiaxin ZHONG (钟家鑫)

## Post-Doc in Acoustics at Penn State University (PSU)

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📅 Last updated on September 27, 2023    📄 ZnN3mD0AAAAJ    📄 🔄 Source code of this CV



## Research Interests



Active Acoustic Metamaterial    Active Noise Control    Audio Signal Processing    Computational Acoustics  
Parametric Array Loudspeaker

## Employment



### 👤 Post-Doc

🏛️ Penn State University

📅 Dec-2022 – Ongoing

📍 University Park, USA

👤 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



ASA Early Career Travel Support Award

Acoustical Society of America (ASA)

📅 17-Apr-2023

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, PDF downloads, and Power Point slides. Bold names: **self**. Names with “\*”: corresponding authors. Names with “†”: contributed equally. Underline names: students under the supervision of Dr. Jiaxin Zhong.

## Books

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

## Journal Articles


- [J24] Tao Zhuang, **Jiaxin Zhong**<sup>\*</sup>, Guilin Ma, Feng Niu, and Jing Lu, “Modeling a phased array of parametric array loudspeaker using the spherical wave expansion,” Under review (2023).
- [J23] Mengtong Li, **Jiaxin Zhong**<sup>\*</sup>, Yun Jing, and Jing Lu, “A note on the audio sound power generated by a parametric array loudspeaker,” Under review (2023).
- [J22] Jun Ji<sup>†</sup>, Hyeonu Heo<sup>†</sup>, **Jiaxin Zhong**<sup>†</sup>, Mourad Oudich<sup>\*</sup>, and Yun Jing<sup>\*</sup>, “Metamaterial-enabled wireless and contactless ultrasonic power transfer and data transmission through a metallic wall,” Under review (2023).
- [J21] **Jiaxin Zhong**<sup>†</sup>, Chengbo Hu<sup>†</sup>, Kangkang Wang, Jun Ji, Tao Zhuang, Haishan Zou, Jing Lu, Hyeonu Heo, Bin Liang<sup>\*</sup>, Yun Jing<sup>\*</sup>, and Jian-Chun Cheng<sup>\*</sup>, “Local-nonlinearity-enabled deep sub-diffraction control of acoustic waves,” Under review (2023).
- [J20] **Jiaxin Zhong**<sup>†</sup>, Tao Zhuang<sup>†</sup>, Mentong Li, Ray Kirby, Mahmoud Karimi, Jing Lu, and Dong Zhang<sup>\*</sup>, “Sidelobe Suppression for a Steerable Parametric Source Using the Sparse Random Array Technique,” *IEEE/ACM Trans. Audio Speech Lang. Process.* 31, 3152–3161 (2023).
- [J19] **Jiaxin Zhong**, Haishan Zou, and Jing Lu<sup>\*</sup>, “A modal expansion method for simulating reverberant sound fields generated by a directional source in a rectangular enclosure,” *J. Acoust. Soc. Am.* 154(1), 203–216 (2023).
- [J18] **Jiaxin Zhong**, Haishan Zou, Jing Lu, and Dong Zhang<sup>\*</sup>, “A modified convolution model for calculating the far field directivity of a parametric array loudspeaker,” *J. Acoust. Soc. Am.* 153(3), 1439–1451 (2023).
- [J17] Tao Zhuang, **Jiaxin Zhong**<sup>\*</sup>, 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<sup>\*</sup>, and Jing Lu, “Low frequency audio sound field generated by a focusing parametric array loudspeaker,” *IEEE/ACM Trans. Audio Speech Lang. Process.* 30, 3098–3109 (2022).
- [J15] **Jiaxin Zhong**, Ray Kirby, Mahmoud Karimi, and Haishan Zou<sup>\*</sup>, “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<sup>\*</sup>, 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<sup>\*</sup>, 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<sup>\*</sup>, “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**<sup>\*</sup>, 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**<sup>\*</sup> 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**<sup>\*</sup>, 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**<sup>\*</sup>, 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**<sup>\*</sup>, 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, Jiancheng Tao<sup>\*</sup>, 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<sup>\*</sup>, **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," *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

- [C12] Tao Zhuang, **Jiaxin Zhong\***, Jing Lu, Feng Niu, and Longbiao He, "Performance of a steerable focusing parametric array loudspeaker," *2024 IEEE International Conference on Acoustics, Speech and Signal Processing*, Coex, Seoul, Korea, Apr 14-19, 2024.
- [C11] Mengtong Li, **Jiaxin Zhong\***, Haishan Zou, and Jing Lu, "System identification of a parametric array loudspeaker using variational recurrent neural network," *2024 IEEE International Conference on Acoustics, Speech and Signal Processing*, Coex, Seoul, Korea, Apr 14-19, 2024.
- [C10] Jun Ji, Hyeonu Heo, **Jiaxin Zhong**, Mourad Oudich, and Yun Jing, "Through-metal-Wall power delivery using an ultrasonic pillar-Based metamaterial," *International Ultrasonics Symposium*, Montreal, Quebec, Canada, Sept 3-8, 2023.
- [C9] John Arthur Case, Carter Paprocki, Hannah Kurdila, Trent Furlong, Eric Rokni, Yu-Tong Wang, **Jiaxin Zhong**, Jun Ji, Daniel Russell, and Andrew Barnard, "Sound power characterization of Corsi-Rosenthal boxes using DIY comparison method," *NOISE-CON 2023*, Grand Rapids, MI, USA, May 15-18, 2023. 
- [C8] **Jiaxin Zhong** and Yun Jing, "Fast and accurate modeling of parametric array loudspeakers in the frequency domain," *Acoustical Society of America 184th Meeting*, Chicago, Illinois, USA, May 8-12, 2023. 
- [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. **Invited.** 
- [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, Nov 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. 

## Issued Patents




- [P1] **Jiaxin Zhong**, Jiancheng Tao, and Xiaojun Qiu, "A method for increasing the performance of active noise control systems with a partition (一种使用隔墙提高有源声辐射控制系统降噪量的方法)," *CN Patent ZL201811394850.9*, Filed Nov 22, 2018, and issued June 6, 2023. 

## Professional Activities & Services



### Membership

- Member, **Institute of Electrical and Electronics Engineers (IEEE)**
- Young Professionals, **IEEE**
- Student Member, **Acoustical Society of America (ASA)**

 1 Mar 2022 – Present  
 1 Jan 2022 – 31 Dec 2023  
 1 Jan 2021 – 11 May 2023

- Member, **Acoustical Society of America (ASA)**
- Associate Member, **Audio Engineering Society (AES)**
- Member, **Audio Engineering Society (AES)**

📅 11 May 2023 – Present  
 📅 27 Jul 2021 – 6 June 2023  
 📅 6 June 2023 – Present

## 🔊 Reviewer

- Applied Acoustics
- Applied Sciences
- Journal of the Audio Engineering Society
- The 18th Asia-Pacific Vibration Conference (APVC)
- The Journal of the Acoustical Society of America
- Wave Motion

📅 2020 – Present  
 📅 2021 – Present  
 📅 2023 – Present  
 📅 2019  
 📅 2022 – Present  
 📅 2021 – Present

## 👤 Session Chair

- Sound Field Manipulation for Personal Audio, **185th Meeting of Acoustical Society of America (Acoustics 2023)**  
 🗿 Jiaxin Zhong and Sipei Zhao 📧 🌐 📍 Sydney, Australia 📅 4–8 Dec 2023