Jia-Xin ZHONG (钟家鑫)

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

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- JiaxinZhong
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- Last updated on 2025-03-30 ▼ ZnN3mD0AAAAJ





Research Interests



Parametric Array Loudspeaker | Audio Signal Processing

Active Noise Control

Sound Zone Control

Employment



- Post-Doc

1 Penn State University

Dec-2022 - Present

University Park, USA

📠 Advisor: Dr. Yun Jing 🛭 🕩 in 🤀

Education



Ph.D. in Acoustics

1 University of Technology Sydney

m 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

1 Nanjing University

iii 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

1 Nanjing University

iii Sep-2011 - Jun-2015

Nanjing, China

Advisor: Prof. Xinlong Wang

The Study of Matching Layers for Ultrasonic Transducers

Honors & Awards



ASA Early Career Travel S	Support Award
A L' I C : - L E A	/ A C A \

Acoustical Society of America (ASA)

ii 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

= 23-Aug-2020

International Institute of Noise Control Engineering (I-INCE)

Australian Research Council (ARC) Linkage Scholarship University of Technology Sydney

前 12-Jun-2020

Tech Lab Staff and Student Committee HDR Collaboration Grant

18-Oct-2019

University of Technology Sydney

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Publications



Below you can find a list of my academic publications, along with links to OOI, DOI, DOI POF 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* (2024).

Journal Articles

- [J29] Mengtong Li, Tao Zhuang, Kai Chen, Jia-Xin Zhong*, and Jing Lu, "Deep learning-based approach for identification and compensation of nonlinear distortions in parametric array loudspeakers," *IEEE Signal Process. Lett.* (2025).
- [J28] **Jia-Xin Zhong**[†], Jun Ji[†], Xiaoxing Xia, Hyeonu Heo, and Yun Jing^{*}, "Audible enclaves crafted by nonlinear self-bending ultrasonic beams," **Proc. Natl. Acad. Sci.** 122(12), e2408975122 (2025).
- [J27] Tao Zhuang, Jia-Xin Zhong*, Guilin Ma, Feng Niu, and Jing Lu, "Modeling a phased array of parametric array loud-speakers using the spherical wave expansion," *IEEE Trans. Audio Speech Lang. Process.* 33, 309–318 (2025).
- [J26] **Jia-Xin Zhong**[†], Pedro Fittipaldi De Castro[†], Tianhong Lu, Jeewoo Kim, Mourad Oudich, Jun Ji, Shi Li, Kai Chen, Jing Lu*, Yun Jing*, and Wladimir A. Benalcazar*, "Higher-order skin effect and its observation in an acoustic kagome lattice," *Phys. Rev. B* 111(1), 014314 (2025).
- [J25] Shao-Zhe Li, Tao Zhuang, Jia-Xin Zhong*, and Jing Lu, "Extended King integral for modeling of parametric array loudspeakers with axisymmetric profiles," J. Acoust. Soc. Am. 156(4), 2189–2199 (2024).
- [J24] Chadi Ellouzi, Ali Zabihi, Farhood Aghdasi, Aidan Kayes, Milton Rivera, **Jiaxin Zhong**, Amir Miri, and Chen Shen*, "Underwater double vortex generation using 3D printed acoustic lens and field multiplexing," **APL Mater.** 12, 031130 (2024).
- [J23] Jun Ji[†], Hyeonu Heo[†], **Jiaxin Zhong**[†], Mourad Oudich^{*}, and Yun Jing^{*}, "Metamaterial-enabled wireless and contact-less ultrasonic power transfer and data transmission through a metallic wall," *Phys. Rev. Appl.* 21, 014059 (2024).
- [J22] Mengtong Li, Jiaxin Zhong*, Yun Jing, and Jing Lu, "A note on the audio sound power generated by a parametric array loudspeaker," J. Acoust. Soc. Am. 154(6), 3899-3905 (2023).
- [J21] **Jiaxin Zhong**[†], Chengbo Hu[†], Kangkang Wang, Jun Ji, Tao Zhuang, Haishan Zou, Jing Lu, Hyeonu Heo, Bin Liang*, Yun Jing*, and Jian-Chun Cheng*, "Local-nonlinearity-enabled deep sub-diffraction control of acoustic waves," **Phys. Rev. Lett.** 131(23), 234001 (2023).
- [J20] Jiaxin Zhong[†], Tao Zhuang[†], Mentong Li, Ray Kirby, Mahmoud Karimi, Jing Lu, and Dong Zhang^{*}, "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*, "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*, "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*, 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/ACM 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).

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- [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).
 Highlighted in Front Cover!
- [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, Jiancheng 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," **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

- [C11] Tao Zhuang, **Jia-Xin Zhong**, and Jing Lu, "The feasibility of sound zone control using an array of parametric array loudspeakers," *International Ultrasonic2024 IEEE 14th International Symposium on Chinese Spoken Language Processing (ISCSLP)*, Beijing, China, Nov 7–10, 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), Gyeonju, 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 Coference*, 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.

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- [P2] Jiaxin Zhong, Jiancheng Tao, and Xiaojun Qiu, "A method for increasing the performance of active noise control systems with two partitions (一种使用两面隔墙提高有源降噪系统性能的方法)," CN Patent ZL201910270294.2, Filed April 3, 2019, and issued Nov 3, 2023.
- [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)
- Member, Acoustical Society of America (ASA)
- Associate Member, Audio Engineering Society (AES)
- Member, Audio Engineering Society (AES)

60 Reviewer

- Acoustics Australia
- Applied Acoustics
- Applied Sciences
- Journal of the Audio Engineering Society

- Physical Review Letter
- Wave Motion

苗 1 Mar 2022 - Present

iii 1 Jan 2022 - 31 Dec 2023

苗 1 Jan 2021 - 11 May 2023

苗 11 May 2023 - Present

苗 27 Jul 2021 - 6 June 2023

苗 6 June 2023 - Present

- The 18th Asia-Pacific Vibration Coference (APVC)
- The Journal of the Acoustical Society of America

= 2021 - Present

2023 - Present

m 2019

2022 - Present

2024 - Present

iii 2021 - Present

Session Chair

 Sound Field Manipulation for Personal Audio, 185th Meeting of Acoustical Society of America (Acoustics 2023) A Jiaxin Zhong and Sipei Zhao 🛭 🌐 Sydney, Australia 苗 4-8 Dec 2023

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