Jiaxin (Jay) Zhong

Post-Doc in Acoustics at Penn State University

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Research Interests

Active Acoustic 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 24-Oct-2022
International Commission for Acoustics (ICA) with Acoustical Society of America (ASA)

Young Professional Grant 23-Aug-2020
International Institute of Noise Control Engineering (I-INCE)

Australian Research Council (ARC) Linkage Scholarship 12-Jun-2020
University of Technology Sydney

Tech Lab Staff and Student Committee HDR Collaboration Grant 18-Oct-2019
University of Technology Sydney

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, 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 (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)*, Gyeonju, 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 Coference*, 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) — 01-Mar-2022 – Present
- Young Professionals, IEEE — 01-Jan-2022 – 31-Dec-2023
- Member, Acoustical Society of America (ASA) — 1-Jan-2021 – Present
- Associate Member, Audio Engineering Society (AES) — 27-Jul-2021 – Present

Reviewer

- Applied Acoustics — 2020 – Present
- Applied Sciences — 2021 – Present
- Asia-Pacific Vibration Coference (APVC) — 2021
- The Journal of the Acoustical Society of America — 2022 – Present
- Wave Motion — 2021 – Present