Jun Ji

Postdoctoral associate at Virginia Tech

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Google Scholar Last updated on October 24, 2025

Research Interests

Integrated Phononic Devices | Acoustic Metamaterials/Metasurfaces | Nonlinear Acoustic Waves | Nanofabrications

Education

Ph.D in Acoustics

The Pennsylvania State University Dec 2023 State College, PA

Advisor: Prof. Yun Jing

B.Eng. in Energy and Power Engineering

Jiangsu University Jun 2018 Zhenjiang, China

Employment

Postdoctoral Associate

Virginia Polytechnic Institute and State University Jan-2024 – Blacksburg, VA

Advisor: Prof. Linbo Shao

Research Scientist Intern

Facebook, Inc. May-2022 – Dec-2022 Redmond, WA

Advisor: Dr. Chuming Zhao

Publications

Below you can find a list of my academic publications, along with links to DOI.
Bold author: **self**. "+": equal contributions. "*": corresponding authors.

Journal Articles

[J20] **Jun Ji**, Joseph G. Thomas, Zichen Xi, Liyang Jin, Dayrl P. Briggs, Ivan I. Kravchenko, Arya G. Pour, Liyan Zhu, Yizheng Zhu, and Linbo Shao*, "On-chip cavity electro-acoustic dynamics ," Under preparation.

[J19] **Jun Ji**, Joseph G. Thomas, Zichen Xi, Ruxuan Liu, Qinxue Fang, Ivan I. Kravchenko, Andreas Beling, Xu Yi, Yizheng Zhu, and Linbo Shao*, "Low-loss phononic integrated circuit using silicon nitride on lithium niobate," Under preparation.

[J18] Liyang Jin, Zichen Xi, Joseph G. Thomas, **Jun Ji**, Yuanzhi Zhang, Nuo Chen, Yizheng Zhu, Linbo Shao*, and Liyan Zhu*, "Microwave-acoustic-driven power electronics ," Under preparation.

[J17] Zengyu Cen, Zichen Xi, Dongyao Wang, Joseph G. Thomas, Bernadeta, Tanmay Singh, **Jun Ji**, Yizheng Zhu, Linbo Shao, and Yu Yao*, "The Working Principle and a Physical Model of an MPnC Photodetector," , Under preparation

[J16] Andy Chen, Jeewoo Kim, **Jun Ji***, and Yun Jing*, "Modeling and measurement of a time-modulated acoustic metasurface backed by a cavity," *npj Acoustics*, Under review.

[J15] Zichen Xi, Hsuan-Hao Lu, **Jun Ji**, Bernadeta R Srijanto, Ivan I. Kravchenko, Yizheng Zhu, and Linbo Shao*, "Injection locking of surface acoustic wave phononic crystal oscillator," *Physica Status Solidi A: Applications and Materials Science*. 2025; 000, e202500605.

[J14] Joseph G. Thomas, Zichen Xi, **Jun Ji**, Guannan Shi, Bernadeta R. Srijanto, Ivan I. Kravchenko, Yu Yao, Linbo Shao, and Yizheng Zhu*, "High Speed Surface Acoustic Wave Imaging with Spectral Interferometry," ***Optica***, 12, 935-944 (2025)

[J13] Zichen Xi+, Zengyu Cen+, Dongyao Wang+, Joseph G. Thomas, Bernadeta R. Srijanto, Ivan I. Kravchenko, Jiawei Zuo, Honghu Liu, **Jun Ji**, Yizheng Zhu, Yu Yao, and Linbo Shao*, "Room-temperature mid-infrared detection using metasurface-absorber-integrated phononic crystal oscillator," ***Laser & Photonics Reviews***, 2025, e00498. **Featured as Back Cover.**

[J12] **Jun Ji**, Zichen Xi, Joseph G. Thomas, Bernadeta R. Srijanto, Ivan I. Kravchenko,Pranay Baikadi,Minglei Sun,William G. Vandenberghe, Ming Jin, Yizheng Zhu, Wenjie Xiong*, Linbo Shao*, "Synthetic-domain computing and neural networks using lithium niobate integrated nonlinear phononics," ***Nature Electronics***, 2025.

[J11] Jiaxin Zhong,Pedro Fittipaldi de Castro, Tianhong Lu, Kevin Kim, Mourad Oudich, **Jun Ji**, Li Shi, Kai Chen, Jing Lu, Wladimir A. Benalcazar, Yun Jing*, "Higher-order skin effect and its observation in an acoustic kagome lattice," ***Physical Review B***, 111, 014314, (2025)

[J10] Zichen Xi, Joseph G. Thomas, **Jun Ji**, Dongyao Wang, Zengyu Cen, Ivan I. Kravchenko, Yu Yao, Yizheng Zhu, and Linbo Shao*, "GHz-frequency Low-phase-noise Oscillator Leveraging On-chip Phononic Crystal Resonantor," ***Physical Review Applied***, 23, 024054 (2025).

[J09] Jiaxin Zhong+, **Jun Ji**+, Xiaoxing Xia, Hyeonu Heo, and Yun Jing*, "Audible enclaves crafted by nonlinear self-bending ultrasonic beams," ***Proceedings of the National Academy of Sciences***, 122 (12), e2408975122, 2025 **Highlighted as News Report:** The Times; Scientific American; The Conversation US; IEEE Spectrum; EL PAIS; PSU News

[J08] 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," ***Physical Review Letters***, 131, 234001 (2023).

[J07] **Jun Ji**+, Hyeonu Heo+, Jiaxin Zhong+, Mourad Oudich*, and Yun Jing*, "Metamaterial-enabled wireless and contactless ultrasonic power transfer and data transmission through a metallic wall," ***Physical Review Applied***, 21, 014059 (2024).

[J06] Dongyi Wang+, Yuanchen Deng+, **Jun Ji**, Mourad Oudich, Wladimir A. Benalcazar*, Guancong Ma*, and Yun Jing*, "Realization of a Z-classified chiral symmetric higher-order topological insulator in a coupling-inverted acoustic crystal," ***Physical Review Letters***, 131, 157201 (2023). **Editor's Selection.**

[J05] **Jun Ji**, Chuming Zhao*, Frank Yao , Tetsuro Oishi, John Stewart, and Yun Jing, "Metamaterial-Augmented head-mounted audio module," ***Advanced Material Technology***, 2300834 (2023). **Featured as Back Cover.**

[J04] **Jun Ji**, Junfei Li, Steven A. Cummer and Yun Jing*, "Ultra-sparse near-perfect sound absorbers," ***J. Acoust. Soc. Am.***, Express Letter 3, 034001 (2023).

[J03] **Jun Ji**+, Dongting Li+, Yong Li, and Yun Jing*, "Low-frequency broadband acoustic metasurface absorbing panels," ***Frontier in Mechanical Engineering***, 6, 586249 (2020).

[J02] Yuanchen Deng+, Mourad Oudich+, Nikhil JRK Gerard, **Jun Ji**, Minghui Lu, and Yun Jing*, "Magic-angle bilayer phononic graphene," ***Physical Review B***, 102 (18), 180304 (2020).

[J01] Xiuyuan Peng, **Jun Ji**, and Yun Jing*, "Composite honeycomb metasurface panel for broadband sound absorption," ***J. Acoust. Soc. Am.***, 144, EL255–EL261 (2018)

Patents

[P03] Mudassir Hussain, Kazuki Nagashima, Hiroyuki Nakano, Yoshiyuki Kunifusa, Masaya Nishida, Yun Jing, **Jun Ji**, Hyeonu Heo, Mourad Oudich, "Acoustic transmission enhancer and acoustic transmission enhancement system," *US Patent Application*. 18/127, 181 (03/28/2023)

[P02] Chuming Zhao, **Jun Ji**, Xiaochu Yao, John Stewart, "Broadband audio enhancement using a metamaterial structure in a front volume of a loudspeaker," *US Patent Application*, 63/454, 903 (03/27/2023)

[P01] Yun Jing, **Jun Ji**, "Sound absorbing panels," *US Patent Application*, 18/705, 355 (10/28/2022)

Conference Communications

[C11] **Jun Ji**, Zichen Xi, Joseph G Thomas, Bernadeta R Srijanto, Ivan I Kravchenko, Ming Jin, Yizheng Zhu, Wenjie Xiong, Linbo Shao "Synthetic-domain Neural Networks using Integrated Nonlinear Phononics on Lithium Niobate ," *CLEO: Science and Innovations*, SS103_3, 2025.

[C10] Joseph Thomas, Zichen Xi, **Jun Ji**, Guanan Shi, Bernadeta R Srijanto, Ivan I. Kravchenko, Yu Yao, Linbo Shao, Yizheng Zhu "High Speed Surface Acoustic Wave Imaging with Spectral Interferometry ," *CLEO: Science and Innovations*, SS118_6, 2025.

[C09] Zichen Xi, Dongyao Wang, Zengyu Cen, Joseph Thomas, Bernadeta R Srijanto, Ivan I. Kravchenko, Jiawei Zuo, **Jun Ji**, Yizheng Zhu, Yu Yao, Linbo Shao, "Ultra-sensitive Room-temperature Mid-infrared Detector using Phononic Crystal Oscillator," *CLEO: Science and Innovations*, 2025.

[C08] Zichen Xi, Dongyao Wang, Zengyu Cen, **Jun Ji**, Joseph Thomas, Jiawei Zuo, Yizheng Zhu, Yu Yao, Linbo Shao, "Infrared Detection Leveraging Low-phase-noise Surface Acoustic Wave Oscillators," *IEEE Research and Applications of Photonics in Defense Conference*, Miramar Beach, FL, 14-16 August, 2024.

[C07] Yun Jing, **Jun Ji**, "Towards extradinoary sound absorption using coupled resonances," *ASA meeting*, Ottawa, Canada, 13-17 May, 2024.

[C06] **Jun Ji**, Hyeonu Heo, Jiaxin Zhong, Mourad Oudich, Yun Jing, "Through-metal-Wall Power Delivery Using an Ultrasonic pillar-Based metamaterial," *IEEE International Ultrasonics Symposium (IUS)*, Montreal, Quebec, Canada, 3-8 Sep, 2023.

[C05] John Case, Carter Paprocki, Hannah Kurdila, Trent Furlong, Eric Rokni, Yu-Tong Wang, Jiaxin Zhong, **Jun Ji**, Daniel Russell, Andrew Barnard, "Sound power characterization of Corsi-Rosenthal boxes using DIY comparison method," *Noise-Con 2023*, Grand Rapids, MI, 15-18 May, 2023.

[C04] **Jun Ji**, Junfei Li, Nikhil JRK Gerard, Xiuyuan Peng, Steven Cummer, Yun Jing, "Chirality-selective transmission of acoustic orbital angular momentum through lossy metasurfaces," *ASA meeting*, Chicago, IL, 8-12 May, 2022.

[C03] **Jun Ji**, Junfei Li, Steve Cummer, Yun Jing, "Ultra-sparse near-perfect sound absorbers," *ASA meeting*, Seattle, WA, 29 Nov–3 Dec, 2021.

[C02] Yun Jing, **Jun Ji**, "Optimization on metasurface-enabled sound absorbing panels," *ASA meeting*, San Diego, CA 2-7 Dec, 2019.

[C01] **Jun Ji**, Ni Sui, Xiang Yan, Fuh-Gwo Yuan, Yun Jing, "Theoretical study of a metasurface-based sound absorber," *ASA meeting*, Louisville, Kentucky 13-17 May, 2019.

Grants

Prototype to Commercialization of mechanical-oscillator-based mid-infrared detectors — Mar 2025 - Feb 2026

Sponser: Commonwealth Cyber Initiative Southwest Virginia Node,Virginia's Center for Innovative Technology
$50,000 awarded as **Co-PI**; PI: Prof. Linbo Shao

Acoustic complementary metamaterials for enhanced sound transmission — Sep 2021 - Apr 2022
Sponser: Murata Manufacturing Co., Ltd.
$55,000 awarded, major contribution (90%) in writing; PI: Prof. Yun Jing

Towards contactless and wireless ultrasound power and data transfer across barriers using pillared acoustic metamaterials — Dec 2023
Sponser: NSF(CCSS)
Not awarded; partial contribution (30%) in writing; PI: Prof. Yun Jing

Teaching and mentoring

Teaching

Guest lecturer — Nov 2024
Course: ECE 4134 (Photonics) / 5134G (Advanced Fiber Optics and Applications)
Invited to give a lecture on "Optical Computing and Optical Neural Networks"

Mentoring

- Ph.D. student: Jeewoo Kim (Penn State) — 2025
- Master student: Andy Chen (Penn State) — 2024-2025
- Undergraduate student: Ben Kreager (research intern, 2019, NCSU) — 2019

Professional Activities & Services

Service

- Presider of session "Applications of advanced fabrication", CLEO 2025, Long Beach, USA

Membership

- Student Member, Acoustical Society of America (ASA) — Dec-2018 – Dec-2023
- Member, Optica (Formerly Optical Society of America) — Mar-2024 – Now

Reviewer

- The Journal of the Acoustical Society of America
- Nature Communications
- Science Advances
- Physical Review Applied
- Physical Review Research
- International Journal of Extreme Manufacturing
- Applied Physics Letters
- Optics Express
- Optical Materials Express
- Noise Control Engineering Journal
- Research
- Journal of Applied Physics
- Journal of Physics D: Applied Physics
- IEEE Open Journal of Ultrasonics Ferroelectrics and Frequency Control

Honors & Awards

Simowitz Award — April-2025
The Pennsylvania State University, Graduate Program in Acoustics

The Joseph and Irene Tobis Graduate Fellowship — Jan-2023
The Pennsylvania State University, Graduate Program in Acoustics

Eugene J. Skudrzyk Award — May-2021
The Pennsylvania State University, Graduate Program in Acoustics