

Yusuke Koroyasu (頃安 祐輔)

JSPS Research Fellow DC2 (Ph.D. Student)

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Research Interests

Acoustic levitation, acoustic manipulation, ultrasonic phased arrays, acoustic radiation force, microfluidics, nonlinear acoustics.

Education

2024/04–present	Ph.D. Program in Informatics, University of Tsukuba Degree Program in Informatics, Graduate School of Comprehensive Human Sciences. Digital Nature Group (Supervisor: Asst. Prof. Tatsuki Fushimi).
2022/04–2024/03	Master of Informatics, University of Tsukuba Degree Program in Informatics, Graduate School of Comprehensive Human Sciences. Digital Nature Group (Supervisor: Yoichi Ochiai).
2018/04–2022/03	Bachelor of Science in Media Sciences and Engineering, University of Tsukuba College of Media Arts, Science and Technology, School of Informatics. Digital Nature Group (Supervisor: Yoichi Ochiai).

Appointments

2025/04–present	JSPS Research Fellow (DC2), Japan Society for the Promotion of Science
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Research Visits

2026/01–2026/05	Visiting Student, Mechanical (Visiting) (PGR), University of Bristol, UK — Faculty of Engineering Host: Prof. Bruce W. Drinkwater.
2023/08–2023/09	Visiting Research Student, University of Birmingham, UK — School of Chemistry Host: Dr. Ruchi Gupta.

Publications

● = presenting author; **bold** = self; † = corresponding author

Peer-Reviewed Journal Articles

Yusuke Koroyasu[†], Christopher Stone, Yoichi Ochiai, Takayuki Hoshi, Bruce W. Drinkwater, Tatsuki Fushimi, “Midair Single-Sided Acoustic Levitation in High-Pressure Regions of Zero-Order Bessel Beams,” *Physical Review Letters*, vol. 137, 094001, 2026.

DOI: [10.1103/pfkh-4x7j](https://doi.org/10.1103/pfkh-4x7j) [Peer-Reviewed] [Altmetric: [top 5% of all research outputs](#)]

Christopher Stone, **Yusuke Koroyasu**, Yoichi Ochiai, Akiko Kaneko, Bruce W. Drinkwater,

Tatsuki Fushimi, “Experimental and numerical study of acoustic streaming in mid-air phased arrays,” *npj Acoustics*, vol. 2, 4, 2026. DOI: 10.1038/s44384-025-00040-7 [Peer-Reviewed]

Tatsuki Fushimi, **Yusuke Koroyasu**, “Multi focus acoustic field generation using Dammann gratings for phased array transducers,” *Results in Physics*, vol. 67, 108040, 2024. DOI: 10.1016/j.rinp.2024.108040 [Peer-Reviewed]

Yusuke Koroyasu, Thanh-Vinh Nguyen, Shun Sasaguri, Asier Marzo, Iñigo Ezcurdia, Yuuya Nagata, Tatsuya Yamamoto, Nobuhiko Nomura, Takayuki Hoshi, Yoichi Ochiai, Tatsuki Fushimi, “Microfluidic platform using focused ultrasound passing through hydrophobic meshes with jump availability,” *PNAS Nexus*, vol. 2, no. 7, pgad207, 2023. DOI: 10.1093/pnasnexus/pgad207 [Peer-Reviewed] [Altmetric: top 5% of all research outputs]

Preprints

Yusuke Koroyasu, Yoichi Ochiai, Tatsuki Fushimi, “Acoustic Manipulation of Tangible Janus Icons on Liquid Droplets,” *arXiv*, 2026. arXiv: 2602.18730 [Under Review]

Yusuke Koroyasu[†], Takayuki Hoshi, Yoshiki Nagatani, Daichi Tagami, Yoichi Ochiai, Tatsuki Fushimi, “Reversible vertical positioning of acoustically levitated particle using a spiral reflector,” *arXiv*, 2026. arXiv: 2601.04595

Yusuke Koroyasu, Thanh-Vinh Nguyen, Shun Sasaguri, Asier Marzo, Iñigo Ezcurdia, Yuuya Nagata, Takayuki Hoshi, Yoichi Ochiai, Tatsuki Fushimi, “Acoustic Needles: 3D Microfluidics using Focused Ultrasound passing through Hydrophobic Meshes,” *Jxiv*, 2022. DOI: 10.51094/jxiv.166

Peer-Reviewed Conference Papers

K. Yamamoto, A. Tsutsui, Y. Zhao, I. Suzuki, K. Tanaka, **Y. Koroyasu**, Y. Ochiai, “Documentary Film of Low Vision Boxing: Collaborative Design of Adaptive Kickboxing Experiences,” *Extended Abstracts of the CHI Conference on Human Factors in Computing Systems (CHI EA '24)*, pp. 1 – 2, 2024. DOI: 10.1145/3613905.3649124

Nozomu Yoshida, Kosaku Namikawa, **Yusuke Koroyasu**, Yoshiki Nagatani, Yoichi Ochiai, “Auditory-centered Vocal Feedback System Using Solmization for Training Absolute Pitch without GUI,” *Human-Computer Interaction – INTERACT 2021, LNCS*, vol. 12935, pp. 3 – 19, 2021. DOI: 10.1007/978-3-030-85610-6_1 [Peer-Reviewed]

Review Articles (in Japanese)

Yusuke Koroyasu, Yoichi Ochiai, Tatsuki Fushimi, 「音響放射力による空中での粉体・エアロゾルの非接触操作技術」, *Funtai Gijutsu (special issue: Particles we want to fly)*, vol. 17, no. 10, pp. 872 – 881, 2025, [in Japanese: Contactless manipulation of powders and aerosols in air using acoustic radiation force].

Yusuke Koroyasu, Yoichi Ochiai, Tatsuki Fushimi, 「液滴を跳躍可能なホログラフィックマイクロ流体基盤」, *Ultrasonic Techno*, vol. 36, no. 5, pp. 36 – 41, 2024, [in Japanese: Holographic microfluidic platform capable of droplet jumping].

International Conference Presentations

● **Yusuke Koroyasu**, Bruce Drinkwater, Tatsuki Fushimi, “Multibody Modelling of Particle Clustering in Acoustic Levitation,” *2026 IEEE International Ultrasonics Symposium (IUS)*, Raleigh, NC, USA, Oct 4–8, 2026.

● **Yusuke Koroyasu**, Christopher Stone, Yoichi Ochiai, Takayuki Hoshi, Bruce W. Drinkwater, Tatsuki Fushimi, “Experimental Demonstration of Acoustic Levitation in High-Pressure Regions Using Zero-Order Bessel Beams,” *Anglo-French Physical Acoustics Conference (AFPAC) 2026*, Bristol, UK, Jan 21–23, 2026.

● **Yusuke Koroyasu**, Takayuki Hoshi, Yoichi Ochiai, Tatsuki Fushimi, “Geometrically driven single-sided acoustic levitator using a zero-order Bessel beam,” *Sixth Joint Meeting of the*

Acoustical Society of America and the Acoustical Society of Japan (189th ASA Meeting), J. Acoust. Soc. Am. 158(4_Supplement), A391, Honolulu, HI, USA, Dec 1–5, 2025.
DOI: [10.1121/10.0041265](https://doi.org/10.1121/10.0041265)

- **Yusuke Koroyasu**, Takayuki Hoshi, Yoichi Ochiai, Tatsuki Fushimi, “Single-sided acoustic levitation with zero-order Bessel beam: beyond twin and vortex trap,” *Sixth Joint Meeting of the Acoustical Society of America and the Acoustical Society of Japan (189th ASA Meeting)*, J. Acoust. Soc. Am. 158(4_Supplement), A392, Honolulu, HI, USA, Dec 1–5, 2025.
DOI: [10.1121/10.0041267](https://doi.org/10.1121/10.0041267)

Christopher Stone, **Yusuke Koroyasu**, Yoichi Ochiai, Akiko Kaneko, Bruce W. Drinkwater, Tatsuki Fushimi, “Characterization of Airborne Acoustic Streaming Induced by Phased Array Transducers,” *2025 IEEE International Ultrasonics Symposium (IUS)*, Sep 15, 2025.

- **Yusuke Koroyasu**, Takayuki Hoshi, Yoichi Ochiai, Tatsuki Fushimi, “Reversal of mid-air acoustic radiation forces: From low- to high-pressure trapping,” *188th Meeting of the Acoustical Society of America / 25th International Congress on Acoustics*, J. Acoust. Soc. Am. 157(4_Supplement), A157, New Orleans, LA, USA, May 18–23, 2025.
DOI: [10.1121/10.0037741](https://doi.org/10.1121/10.0037741)

- **Yusuke Koroyasu**, “Trapping object using an ultrasonic traveling beam,” *2025 Ultrasonic AsPIRE Conference*, Tsukuba, Japan, May 2, 2025. [\[Invited\]](#)

- **Yusuke Koroyasu**, Ruchi Gupta, Tatsuya Yamamoto, Yoichi Ochiai, Nobuhiko Nomura, Tatsuki Fushimi, “Microfluidic platform using focused ultrasound passing through hydrophobic meshes towards automatic biological experiment,” *185th Meeting of the Acoustical Society of America (Acoustics 2023 Sydney)*, J. Acoust. Soc. Am. 154(4_Supplement), A52, Sydney, Australia, Dec 4–8, 2023. DOI: [10.1121/10.0022768](https://doi.org/10.1121/10.0022768)

- **Yusuke Koroyasu**, Daichi Tagami, Takayuki Hoshi, Yoshiki Nagatani, Yoichi Ochiai, Tatsuki Fushimi, “Reflective acoustic metamaterial for dynamic axial sub-wavelength field control in acoustic levitation,” *180th Meeting of the Acoustical Society of America (Acoustics in Focus)*, 2aSA8; J. Acoust. Soc. Am. 149(4_Supplement), A80, Virtual, Jun 8–10, 2021.
DOI: [10.1121/10.0004580](https://doi.org/10.1121/10.0004580)

Domestic Conference Presentations (in Japanese)

- 頃安祐輔, Christopher Stone, 落合陽一, 星貴之, Bruce Drinkwater, 伏見龍樹, 「ゼロ次ベッセルビームの高圧領域を用いた音源遠方での音響浮遊」, 日本音響学会 2026 年秋季研究発表会, 1-12-14, Kanazawa, Sep 8, 2026.

七尾日和, 伏見龍樹, 頃安祐輔, 「超音波浮揚による 100 μ L 級液滴の非接触空中保持」, 日本音響学会 2026 年春季研究発表会, 2-2-4, Nihon University, Tokyo, Mar 18, 2026.

伏見龍樹, 頃安祐輔, 落合陽一, 「撥水面における液滴操作を用いた高重量物体の超音波搬送」, 日本音響学会 2025 年春季研究発表会, 1-8-12, Saitama, Mar 17–19, 2025.

- 頃安祐輔, 伏見龍樹, 「位相シグネチャーを加えた場合における平衡位置の逆転現象」, 日本音響学会 2025 年春季研究発表会, 1-8-11, Saitama, Mar 17–19, 2025.

- 頃安祐輔, 伏見龍樹, 「ダマングレーティングへの位相シグネチャーの応用」, 日本音響学会 2024 年秋季研究発表会, 1-8-16, Osaka, Sep 4–6, 2024.

- 頃安祐輔, 星貴之, 落合陽一, 伏見龍樹, 「集束超音波が物体に与える音響放射力の平面内における分布」, 日本音響学会 2024 年春季研究発表会, 1-10-12, Tokyo, Mar 6–8, 2024. [\[Student Excellent Presentation Award\]](#)

- 頃安祐輔, 星貴之, 落合陽一, 「超音波霧化による撥水面から定在波への液滴の転送」, 日本音響学会 2022 年秋季研究発表会, 2-6-8, Hokkaido, Sep 14–16, 2022.

星貴之, 頃安祐輔, 伏見龍樹, 「定在波浮揚におけるノード間遷移手法の検討」, 非線形音響研究会資料, 21-5, Online, Jul 12, 2021.

Patents

Tatsuki Fushimi, Yoichi Ochiai, **Yusuke Koroyasu**, “Particle manipulation device and particle manipulation method,” JP Patent Application No. 2022-122138; granted as JP Patent No. 7812565 (Feb 10, 2026).

Grants, Fellowships & Scholarships

2025/04–2027/03	JSPS Research Fellowship for Young Scientists (DC2), Japan Society for the Promotion of Science (KAKENHI 25KJ0673) “Contactless manipulation technology utilizing the equilibrium-position reversal in mid-air acoustic levitation”
2025	Overseas Dispatch Grant for Researchers, Murata Science and Education Foundation “Expanding the movable range of levitated particles in single-sided acoustic levitation”
2024/04–2025/03	JST SPRING (Support for Pioneering Research Initiated by the Next Generation), Japan Science and Technology Agency / University of Tsukuba “Stabilization of mid-air acoustic levitation with a single beam”
2024	Kuma Foundation Creator Scholarship (8th cohort), Kuma Foundation
2023	Agency for Cultural Affairs Media Arts Creator Development Program — Domestic Creator Presentation Support, Agency for Cultural Affairs, Japan “Echoing Shimmering Boundaries” — team -間- (Yuga Tsukuda, Haruki Inose, Yusuke Koroyasu)
2022–2023	JASSO Type I Scholarship — half-amount repayment exemption for outstanding achievement, Japan Student Services Organization
2019	Pioneering Researcher Experience Program, University of Tsukuba “Position control of liquids in contact and non-contact with surfaces under microgravity”
2018	Pioneering Researcher Experience Program, University of Tsukuba “Testing the sense-of-agency hypothesis for virtual bodies and its application to third-person Redirected Walking”

Awards & Honors

2024	28th Student Excellent Presentation Award, Acoustical Society of Japan (Spring Meeting 2024)
2022/03	Dean’s Award (FY2021), College of Media Arts, Science and Technology, University of Tsukuba
2017/08	Minister of Education Award, FY2017 Super Science High School Student Research Presentation “Control of pipe flow using wettability under microgravity”
2017	Excellence Award (Natural Science, Physics), 41st All Japan High School Culture Festival
2017	Excellence Award (Poster), 13th JPS Junior Session, Physical Society of Japan

2017	3rd Place (Poster, Japanese Division), 7th Tsukuba International Science Idea Contest (Tsukuba Science Edge)
2015	Masukawa Juku Director's Award, 8th Masukawa Juku Symposium, Kyoto Sangyo University

Teaching & Research Assistance

2024	Teaching Assistant — Introduction to Contents (autumn semester), University of Tsukuba
2022/08–2024	Research Assistant (intermittent), University of Tsukuba

Academic Service

Reviewing	Ultrasonics (Elsevier); Journal of Applied Physics (AIP)
Memberships	Acoustical Society of Japan

Selected Exhibitions & Performances

2025	Walking on Water / (Sur)real — Chamber music × Media art performance Arei Hall (Tokyo) / Ark Sakae Salon Hall (Nagoya)
2024	KUMA experiment 2024-25 — "Ibuki" exhibited Kuma Foundation Gallery, Roppongi
2024	"Echoing Shimmering Boundaries" — -間- group exhibition Space √ K, Shinjuku
2022	"Nostalgia" — Sound installation Former Makabe Post Office, Ibaraki
2022	"Memory of Being" — -間- group show "Seeping Here" PRIVATE, Koto Ward, Tokyo
2022	"bugs" — -間- group show "Between Organisms, Humans, and Computers" gallery Y, Tsukuba
2021	"sound bugs" — Hirasuna Art Movement "Mujina PLAY" Tsukuba Center Building
2019	Hirasuna Art Movement Hirasuna Dormitory Bldg. 9, University of Tsukuba

Media & Press

2026/10	EurekAlert!: Ultrasonic beam extends acoustic levitation range sixfold
2026/10	Seibundo Shinkosha: Kodomo no Kagaku, Nov 2026 issue — "Kokatopi!" news page
2026/09	TBS Radio "Ogiue Chiki Session": Levitating objects and putting out fire with sound: the state of acoustic technology (in Japanese; Screenless Media Lab. report)
2026/09	Nazology: Ultrasound holds a small sphere in midair — even 40 cm away and beyond an obstacle (in Japanese)
2026/09	Technology.org: Ultrasonic beam extends acoustic levitation range sixfold
2026/09	Click Petróleo e Gás: Scientists Develop Sonic 'Tractor Beam' to Move Objects Almost Half a Meter Away

2026/09 Forbes JAPAN: [Levitating and manipulating objects with sound: an acoustic levitation technology from the University of Tsukuba \(in Japanese\)](#)

2026/09 ZME Science: [Scientists Built a Sound “Tractor Beam” That Can Move Objects From Nearly Half a Meter Away](#)

2026/08 Karapaia: [Ultrasonic beam levitates objects from six times the conventional distance \(in Japanese\)](#)

2026/08 University of Tsukuba (TSUKUBA JOURNAL): [Ultrasonic beam levitates objects from six times the conventional distance](#)

2026/08 Scientific Frontline: [Long-Range Acoustic Levitation via Bessel Beams](#)

2026/08 Phys.org: [Narrow ultrasonic beam enables stable 3D levitation six times farther than before](#)

2026/08 JST / University of Tsukuba: [Ultrasonic beam levitates objects from six times the conventional distance](#)

2026/08 University of Bristol: [Ultrasonic beam extends acoustic levitation range sixfold](#)

2026/08 YouTube: [Midair single-sided acoustic levitation with a Bessel beam — explainer video](#)

2026/02 EurekAlert!: [Experimental and numerical framework for acoustic streaming prediction in mid-air phased arrays](#)

2026/02 TechXplore: [Midair haptics and levitation may get steadier with predictable ultrasonic airflow](#)

2026/02 University of Tsukuba: [Experimental verification and numerical analysis of acoustic streaming in mid-air phased arrays](#)

2026/01 JAXA: [#KiboXtalk vol.02 — The future of space with space natives \(Part 2\)](#)

2023/10 NewsPicks (YouTube): [Research by eight University of Tsukuba students \(Yoichi Ochiai\)](#)

2023/08 Modern Sciences: [Ultrasound Tech Takes Science to New Heights Using “Microfluidic Platform”](#)

2023/08 Phys.org: [Ultrasound-based microfluidic manipulation platform for airborne droplets](#)

2023/07 University of Tsukuba: [A microfluidic platform that makes droplets jump with mid-air ultrasound](#)

2021/03 NEWS Tsukuba: [Twelve artists including Tsukuba students exhibit at Tsukuba Center Building](#)

2019/01 TOKYO FM / JFN: [FUTURES — Yoichi Ochiai RADIO PIXIE DUST \(guest\)](#)