Hiroki Yoshida （吉田 拓暉）

Curriculum Vitae

November 11, 2026

Theoretical condensed matter physicist
Department of Applied Physics, Graduate School of Engineering, The University of Tokyo
Email: hiroki[at]hirokiyoshida.com · Web: hirokiyoshida.com · ORCID: 0000-0002-4505-047X

Position

- **JSPS Research Fellow (PD)**, Department of Applied Physics, The University of Tokyo, Oct. 2026–present.

Education

- **Ph.D. in Physics**, Institute of Science Tokyo (formerly Tokyo Institute of Technology), Tokyo, Japan, Sept. 2023–Sept. 2026.
- **M.Sc. in Physics**, Tokyo Institute of Technology, Tokyo, Japan, Apr. 2022–Sept. 2023.
- **B.Sc. in Physics**, Tokyo Institute of Technology, Tokyo, Japan, Apr. 2018–Mar. 2022.

Research experience

Doctoral research (Prof. Shuichi Murakami), Sept. 2023–Sept. 2026

- Magnetoelastic coupling of surface acoustic waves and magnetostatic waves in ferromagnetic films mediated by dipolar interactions.
- Quantized spin photovoltaic effects in altermagnetic Weyl semimetals.
- Diverging shift-current responses in the two-dimensional Weyl-semimetal limit.
- Emergent-gravity Hall effects from quantum geometry (with Prof. Takehito Yokoyama).

Master's research (Prof. Shuichi Murakami), Apr. 2022–Sept. 2023

- Polarization jumps across two-dimensional Weyl-semimetal phases (with Tiantian Zhang).
- Polarization jumps at topological phase transitions.

Undergraduate research (Prof. Shuichi Murakami), Apr. 2021–Mar. 2022

- Interface states in BC_2N sheets.

Undergraduate research (Prof. Kazutaka Takahashi), Aug. 2020–Feb. 2022

- Dynamical Lee–Yang zeros in stochastic systems.

Publications

1. H. Yoshida and T. Yokoyama, "Emergent-Gravity Hall Effect from Quantum Geometry," *Phys. Rev. Lett.* **137**, 206302 (2026)

2. H. Yoshida, J. Priessnitz, L. Šmejkal, and S. Murakami, "Quantization of spin circular photogalvanic effect in altermagnetic Weyl semimetals," *Phys. Rev. Lett.* **136**, 096701 (2026)

3. H. Yoshida and T. Yokoyama, "Light-induced magnetization by quantum geometry," *Phys. Rev. B* **114**, 094430 (2026)

4. H. Yoshida, R. Kono, M. Fujimoto, M. Asano, D. Hatanaka, K. Yamamoto, and S. Murakami, "Magnetoelastic waves in ferromagnetic thin films mediated by dipolar interactions," *Jpn. J. Appl. Phys.* **65**, 110903 (2026)

5. H. Yoshida and S. Murakami, "Diverging shift current responses in the gapless limit of two-dimensional systems," *Phys. Rev. B* **111**, 155402 (2025)

6. H. Yoshida, T. Zhang, and S. Murakami, "Polarization jumps across topological phase transitions in two-dimensional systems," *Phys. Rev. B* **108**, 075160 (2023)

7. H. Yoshida, T. Zhang, and S. Murakami, "Polarization jumps by breaking symmetries of two-dimensional Weyl semimetals," *Phys. Rev. B* **107**, 035122 (2023)

8. H. Yoshida and K. Takahashi, "Dynamical Lee–Yang zeros for continuous-time and discrete-time stochastic processes," *Phys. Rev. E* **105**, 024133 (2022)

Awards

- **Outstanding Poster Presentation Award**, "キメラ準粒子が切り拓く新物性科学" area meeting, May 2026.
- **Gold Poster Award**, International Workshop on Spintronics, May 2025.
- **Young Investigator Award**, 18th Interdisciplinary Research Group on Physical Properties Science, Nov. 2024.
- **Student Presentation Award**, Physical Society of Japan 78th Annual Meeting, Oct. 2023.
- **Tokyo Tech Award for Student Leadership**, Oct. 2021.

Fellowships and scholarships

- **JSPS Research Fellowship for Young Scientists (PD)**, Oct. 2026–Mar. 2027.
- **JSPS Research Fellowship for Young Scientists (DC1)**, Apr. 2024–Sept. 2026.
- **Ito Foundation for International Education Exchange**, Aug. 2023–Aug. 2025.
- **The Moritani Scholarship Foundation**, Apr. 2024–Sept. 2026.
- **Nakayama Foundation**, Apr. 2022–Mar. 2024.

Invited seminars

- **"Emergent-Gravity Hall Effect from Quantum Geometry"** — Seminar at PGI-1, Forschungszentrum Jülich GmbH, Germany, Sept. 10, 2026.
- **"Quantized Spin CPGE in Altermagnetic Weyl Semimetals"** — INSPIRE seminar, JGU Mainz, Germany, Sept. 8, 2026.
- **"交替磁性ワイル半金属のトポロジー"** — Topological Condensed Matter Seminar, Osaka University, Japan, Nov. 27, 2025.
- **"Symmetry and topology of altermagnetic Weyl semimetals: quantization of spin circular photogalvanic effect"** — ST-group seminar, Nagoya University, Japan, Feb. 26, 2025.
- **"2 次元 Weyl 半金属極限における電気分極とシフト電流"** — Department of Applied Physics seminar, Tokyo University of Science, Japan, Oct. 17, 2024.

Contributed oral presentations

- **"Magnetoelastic Waves in Ferromagnetic Thin Films Mediated by Dipolar Interactions"** — 学術変革領域(A)「キメラ準粒子」A01 班研究会「理論が拓くキメラ準粒子研究のフロンティア」, Shizuoka, Japan, Nov. 5, 2026.
- **"量子幾何に由来する光誘起磁化"** — Physical Society of Japan 2026 Spring Meeting, Online, Mar. 26, 2026.
- **"量子幾何による創発重力ホール効果"** — Physical Society of Japan 2026 Spring Meeting, Online, Mar. 23, 2026.
- **"Theory of Magneto-elastic coupling in a ferromagnetic thin film mediated by dipolar interaction"** — APS Global Physics Summit 2026, Denver, CO, USA, Mar. 18, 2026.
- **"Theory of Magneto-elastic coupling in a ferromagnetic thin film mediated by dipolar interaction"** — Iwate Spintronics School 2026, Young Researcher's Gathering, Iwate, Japan, Mar. 2, 2026.
- **"交替磁性ワイル半金属におけるスピン円偏光ガルバノ効果の量子化"** — Physical Society of Japan 80th Annual Meeting, Hiroshima, Japan, Sept. 19, 2025.
- **"Pure spin bulk photovoltaic effect in Altermagnets"** — APS Global Physics Summit, Anaheim, USA, Mar. 17, 2025.
- **"2 次元 Weyl 半金属極限におけるシフト電流応答の発散"** — Physical Society of Japan 79th Annual Meeting, Hokkaido, Japan, Sept. 16, 2024.
- **"Shift current responses of a two-dimensional system approaching the Weyl semimetal phase"** — 2024 American Physical Society March Meeting, Minneapolis, USA, Mar. 4, 2024.
- **"二次元トポロジカル相転移における電気分極のジャンプ"** — Physical Society of Japan 78th Annual Meeting, Miyagi, Japan, Sept. 19, 2023. *(Student Presentation Award)*
- **"Polarization jumps across Weyl semimetal phase in two-dimensional materials"** — 2023 American Physical Society March Meeting, Las Vegas, USA, Mar. 8, 2023.
- **"導体極限における電気分極のジャンプと表面電荷の振る舞い"** — Physical Society of Japan 2022 Autumn Meeting, Tokyo, Japan, Sept. 12, 2022.

Poster presentations

- **"Magnetoelastic Waves in Ferromagnetic Thin Films Mediated by Dipolar Interactions"** — 学術変革領域(A)「キメラ準粒子」A01 班研究会「理論が拓くキメラ準粒子研究のフロンティア」, Shizuoka, Japan, Nov. 6, 2026.
- **"Theory of Magnetoelastic coupling in ferromagnetic thin films mediated by dipolar interactions"** — Spin Mechanics 9, Kyoto, Japan, Oct. 5, 2026.
- **"Magnetoelastic Waves in Ferromagnetic Thin Films Mediated by Dipolar Interactions"** — SPICE workshop *Elastically Driven Phases and Dynamics in Quantum Materials*, Ingelheim, Germany, Sept. 1, 2026.
- **"Emergent-Gravity Hall Effect from quantum geometry"** — IAS-APS Physical Review Workshop on Frontiers in Quantum Geometry and Correlation, HKUST, Hong Kong, Aug. 19, 2026.
- **"Magnetoelastic Waves in Ferromagnetic Thin Films Mediated by Dipolar Interactions"** — Area meeting of "キメラ準粒子が切り拓く新物性科学", Osaka, Japan, May 15, 2026. *(Outstanding Poster Presentation Award)*
- **"Emergent-Gravity Hall Effect from quantum geometry"** — APS Global Physics Summit 2026, Denver, CO, USA, Mar. 19, 2026.
- **"Theory of Magneto-elastic coupling in a ferromagnetic thin film mediated by dipolar interaction"** — Iwate Spintronics School 2026, Iwate, Japan, Mar. 5 & 6, 2026.
- **"Emergent-gravity Hall effect from quantum geometry"** — ISSP *New Frontiers of Geometry and Topology*, Chiba, Japan, Jan. 28, 2026.
- **"Quantization of spin circular photogalvanic effect in altermagnetic Weyl semimetals"** — キメラ準粒子・分野融合研究会, Kyushu University, Japan, Dec. 25, 2025.
- **"Emergent-gravity Hall effect from quantum geometry"** — ISSP International Workshop *Quantum Transport Frontiers of Mesoscopic Physics*, Kashiwa, Japan, Oct. 21, 2025.
- **"Quantization of spin circular photogalvanic effect in altermagnetic Weyl semimetals"** — Chimera International Conference 2025, San Sebastian, Spain, Sept. 30, 2025.
- **"Quantization of spin circular photogalvanic effect in altermagnetic Weyl semimetals"** — International Workshop on Spintronics, San Cristobal, Galapagos, Ecuador, May 27 & 29, 2025. *(Gold Poster Award)*
- **"交代磁性ワイル半金属における円偏光スピン光ガルバノ効果の量子化"** — 72nd JSAP Spring Meeting, Chiba, Japan, Mar. 14, 2025.
- **"Quantization of spin circular photogalvanic effect in altermagnetic Weyl semimetals"** — Iwate Spintronics School 2025 Winter, Iwate, Japan, Feb. 20, 2025.
- **"Quantization of Spin Circular Photogalvanic Effect in Altermagnetic Weyl Semimetals"** — RIKEN CEMS Symposium on Quantum Information and Spintronics 2024, Akihabara, Tokyo, Japan, Dec. 11, 2024.
- **"Quantization of Spin Circular Photogalvanic Effect in Altermagnetic Weyl Semimetals"** — ISSP *New Trends in Condensed Matter Theory*, Kashiwa, Japan, Dec. 10, 2024.
- **"交代磁性体における円偏光スピン光ガルバノ効果の量子化"** — 18th Interdisciplinary Research Group on Physical Properties Science (第 18 回物性科学領域横断研究会), Hyogo, Japan, Nov. 27, 2024. *(Young Investigator Award)*
- **"Pure spin shift current generations in Altermagnets"** — KiPAS International Workshop on Recent Advances in Orbitronics and Spintronics, Yokohama, Japan, Nov. 13, 2024.
- **"Bulk photovoltaic effects in Weyl semimetals"** — Highlights on Condensed Matter Physics, Saitama, Japan, Nov. 2, 2024.
- **"Shift current responses of a two-dimensional system approaching the Weyl semimetal phase"** — New Perspectives in Spintronics and Quantum Transport 2024, Ishikawa, Japan, June 8, 2024.
- **"Shift current responses of a two-dimensional system approaching the Weyl semimetal phase"** — RIKEN CEMS Symposium on Emergent Quantum Materials 2024, Tokyo, Japan, Feb. 21, 2024.
- **"Shift current responses of a two-dimensional system approaching the Weyl semimetal phase"** — International Symposium on Quantum Electronics, Tokyo, Japan, Feb. 15, 2024.
- **"Shift current responses of a two-dimensional system approaching the Weyl semimetal phase"** — Topological Electronics and Bosonics: from Concepts to Devices, Aussois, France, Jan. 29 – Feb. 2, 2024.
- **"Shift current responses of a two-dimensional system approaching the Weyl semimetal phase"** — Topological and Holographic Quantum Matter School and Conference, Santiago, Chile, Jan. 16, 2024.
- **"Existence and termination of edge states in non-Hermitian systems"** — Physics of Open Systems and Beyond, Hokkaido, Japan, Aug. 20, 2023.

Teaching

- Teaching assistant, Mathematical Physics Exercises I, Apr.–May 2022; Apr.–June 2024; Apr.–June 2025; Apr.–June 2026.
- Teaching assistant, Electromagnetism Exercises, Apr.–June 2024; Apr.–June 2026.
- Teaching assistant, Physics Presentation, Apr.–Aug. 2024; Apr.–Aug. 2025; Apr.–Aug. 2026.
- Teaching assistant, Mathematical Physics Exercises II, June–Aug. 2023.
- Teaching assistant, TOEFL Seminar Reading & Writing, June–Aug. 2023.
- Teaching assistant, Mechanics Exercises, Apr.–Aug. 2021.
- Physics Student Consultant, Oct. 2025–Feb. 2026.

Outreach

- **Science Game Jam Tokyo 2024** — co-created the game "ぴかまぐ！", inspired by the spin photovoltaic effect in altermagnets; the team received a Game Creator Award.

Leadership

- **President**, Tokyo Tech student survey team, May 2019–Mar. 2021 (gathered opinions from university members and submitted proposals to the university president).