

Hiroataka Goto

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Research Interests

complex systems, mathematical biology, social dynamics, computational social science

Academic Appointments

2025–2027 **JSPS Research Fellow (DC2)**, Japan Society for the Promotion of Science.
2024–2025 **Research Associate**, School of Interdisciplinary Mathematical Sciences, Meiji University (Tokyo, Japan).

Education

2024–present **Ph.D. in Mathematical Sciences**, Meiji University, expected Mar. 2027.
Advisor: Hiraku Nishimori; co-advisors: Joe Wakano, Kota Ikeda
2025–present **Visiting Ph.D. Student**, University of Pennsylvania, Department of Biology.
Advisor: Joshua Plotkin
2024 **M.S. in Mathematical Sciences**, Graduate Dean’s Award, Meiji University.
Advisor: Hiraku Nishimori
2022 **B.S. in Mathematical Sciences**, Meiji University. Advisor: Kota Ikeda
2021 **Visiting Undergraduate Student**, Columbia University, School of Professional Studies.

Publications

[†] Equally contributed

1. I. Yamazaki[†], **H. Goto**[†], K. Otoguro, H. Nishimori, M. Shiraishi, and T. Narizuka, *A behavioral principle underlying attacker–defender interactions in soccer*, arXiv (2026). [[preprint](#)]
2. **H. Goto** and J. B. Plotkin, *A population threshold for dedicated teaching*, **Proc. Natl. Acad. Sci. U.S.A.** 123 (12) e2517041123 (2026). [[article](#)]
3. **H. Goto**, M. Shiraishi, H. Nishimori, and J. B. Plotkin, *Dynamics of social balance with ternary interpersonal relationships*, **Journal of Social Physics** 1(1):1 (2025). [[article](#)]
4. **H. Goto**, *Modeling urbanization dynamics by labor force migration*, **Physical Review E** 110, 044314 (2024). [[article](#)]
5. **H. Goto**, M. Shiraishi, and H. Nishimori, *Onset of intragroup conflict in a generalized model of social balance*, **Physical Review Letters** 133, 127402 (2024). [[article](#)]

Fellowships and Grants

- SECS travel grant, Young Researchers of the Complex Systems Society (yrCSS), Oct. 2026.
- Grant-in-Aid for JSPS Fellows (PI), Japan Society for the Promotion of Science, 2025–2027. Grant No. 25KJ2129. Project: *Exploring Diverse Within-Group Dynamics via Triadic Interactions*.
- JSPS Research Fellowship for Young Scientists (DC2), 2025–2027.

- Sasakawa Scientific Research Grant (PI), The Japan Science Society, 2024–2025. Grant No. 2024-6036.
- Meiji University Overseas Challenge Program for Doctoral Students, 2024.

Talks and Conference Presentations

- (upcoming) [**Invited**] Workshop on Mathematical Modeling, Meiji University, Tokyo, Nov. 2026.
- (upcoming) [**Invited**] Applied Mathematics Freshman Seminar, Campus Plaza Kyoto, Kyoto, Oct.–Nov. 2026.
- (upcoming) Sports Satellite at CCS2026 (Complexity and Sports), *What governs one-on-one interactions in soccer? A behavioral principle of attacker–defender play*, Binghamton University, NY, Oct. 2026.
- (upcoming) CCS2026, *When it pays to teach: a population threshold for dedicated teaching*, Binghamton University, NY, Oct. 2026.
- (upcoming) Theory Tea Seminar, EEB, Princeton University, NJ, Sep. 2026.
- [**Invited**] ICMMA2025, Meiji University, Tokyo, Jan. 2026.
- [**Invited**] MIMS Cafe Seminar, Meiji Institute for Advanced Study of Mathematical Sciences, Sep. 2025.
- StatPhys29, *Extending social balance theory: introducing three-state models for interpersonal relationships*, Florence, Italy, Jul. 2025.
- ACMB–JSMB2025, *The evolution of teachers in population dynamics*, Kyoto, Jul. 2025.
- NetSci2025, Maastricht, Netherlands, Jun. 2025. [poster]
- [**Award Lecture**] Sasakawa Scientific Research Awards Ceremony, ANA Intercontinental Tokyo, Tokyo, Apr. 2025.
- 15th Taiwan–Japan Joint Workshop for Young Scholars in Applied Mathematics, National Cheng Kung University, Tainan, Taiwan, Mar. 2025.
- [**Invited**] Science Tokyo Nonlinear Science Seminar, Institute of Science Tokyo, Jan. 2025.
- Masuda Lab, State University of New York at Buffalo, NY, Nov. 2024.
- [**Invited**] Mini Symposium on ‘Determinantal Point Processes, Quantum Mechanics, and Signal Analysis’, Chuo University, Tokyo, Jul. 2024.
- JPS Spring Sectional Meeting, The Physical Society of Japan, online, Mar. 2024.
- 14th Taiwan–Japan Joint Workshop for Young Scholars in Applied Mathematics, Meiji University, Feb. 2024.
- MIMS Sociophysics Workshop, Meiji University, Dec. 2023.
- Penn–Meiji Workshop on Mathematical Biology, University of Pennsylvania, PA, Sep. 2023.
- StatPhys28, University of Tokyo, Aug. 2023.
- 13th Taiwan–Japan Joint Workshop for Young Scholars in Applied Mathematics, National Center for Theoretical Sciences, Taipei, Taiwan, Mar. 2023.
- JSPS-APCTP Workshop on Roles of Heterogeneity in Nonequilibrium Collective Dynamics (RHINO2022), University of Tokyo, Sep. 2022. [poster]
- JPS Autumn Sectional Meeting, The Physical Society of Japan, Tokyo Institute of Technology, Sep. 2022.
- 12th Japan–Taiwan Joint Workshop for Young Scholars in Applied Mathematics, Ryukoku University, Shiga, Japan, Mar. 2022.
- ICMMA2021, online, Jan. 2022. [poster and lightning talk]

Teaching Experience

- Teaching Assistant, School of Interdisciplinary Mathematical Sciences, Meiji University (2023–2025). Courses: Linear Algebra; Mathematical Science B; Mathematical Physics; Programming I & II.
- Learning Lounge Teaching Assistant (LLTA), Meiji University (2023–2024). Academic language learning support.

Professional Service

- Journal Referee: *Physical Review E* (3), *Physical Review Research* (1), *Scientific Reports* (1)

Awards and Honors

- JSPS Research Encouragement Special Allowance (Final-Year Merit Distinction), Japan Society for the Promotion of Science (2026).
- Sasakawa Scientific Research Award, The Japan Science Society (2025)
- Excellent Research Awards, Taiwan–Japan Joint Workshops for Young Scholars in Applied Mathematics (2023–2025)
- Graduate Dean’s Award, Meiji University (2024)
- Excellent Presentation Award, Taiwan–Japan Joint Workshop for Young Scholars in Applied Mathematics (2022).
- Best Poster Award, ICMMA2021 (2022)
- Honor for Outstanding Academic Performance, Meiji University (2021)

Institutional Service

- Exam Proctor, Undergraduate Entrance Exams, Meiji University (2025)
- Exam Proctor, The Common Test for University Admissions, Japan (2025)

Last updated: September, 2026