

Hye Jin Park | Curriculum Vitæ

Statistical Physics of Eco-Evolutionary Dynamics (SPEED) group,
Department of Physics, Inha University, Incheon, South Korea (22212)

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Research Experience

Department of Physics, Inha University

Assistant Professor

Incheon, South Korea

2022.03.01–present

Department of Physics, POSTECH

Adjunct Professor

Pohang, South Korea

2020.09.01–2022.02.28

Asia Pacific Center for Theoretical Physics

Junior Research Group Leader

Pohang, South Korea

2020.04.01–2022.02.28

Max-Planck Institute for Evolutionary Biology

PostDoc

Plön, Germany

2016.09.01–2020.03.31

Education

Sungkyunkwan University

Ph. D. in physics

Title: Statistical physics approach to social phenomena

Advisor: Beom Jun Kim

Suwon, South Korea

2011–2016

B. Sc. in Physics

2007–2011

Research Subject

- Ecological and evolutionary dynamics
- Evolutionary game dynamics
- Computational social science
- Spin system

Publications

- [24] S. G. Yang and **Park, H. J.**, Enhancing Biodiversity through Self-Regulation, submitted (arXiv).
- [23] J. Lee, W. Shou, and **Park, H. J.**, Condition for successful artificial selection on microbial collectives and optimal experimental setup, submitted (bioRxiv).
- [22] **Park, H. J.**, C. Hilbe, M. Nowak, B. J. Kim, and H.-C. Jeong, Vacancies in growing habitats promote the evolution of cooperation, *Journal of Theoretical Biology* 575 (2023), 111629.
- [21] Y. Park, T. Shimada, S. W. Son, and **Park, H. J.**, Invasion and interaction determine population

composition in an open evolving system, *Chaos* 33 (2023), 063151.

- [20] Y. Wang, J. Zhao, **Park, H. J.**, and D. Zhou, Effect of dedifferentiation on noise propagation in cellular hierarchy, *Phys. Rev. E* 105 (2022), 054409.
- [19] Y. Gao, **Park, H. J.**, A. Traulsen, and Y. Pichugin, Evolution of irreversible somatic differentiation, *eLife* (2021), 2021;10:e66711.
- [18] J. I. Park, B. J. Kim, **Park, H. J.**, Stochastic resonance of abundance fluctuations and mean time to extinction in an ecological community, *Phys. Rev. E* 104 (2021), 024133.
- [17] **Park, H. J.**, C. S. Gokhale, and Frederic Bertels, How sequence populations persist inside bacterial genomes, *Genetics*, (2021), iyab027.
- [16] C. S. Gokhale and **Park, H. J.**, Eco-evolutionary spatial dynamics of non-linear social dilemmas, *Advances in Dynamic Games*, (2020), 185-198.
- [15] G. B. Ayan, **Park, H. J.**, and J. Gallie, The birth of a bacterial tRNA gene by large-scale, tandem duplication events, *eLife*, (2020), 2020;9:e57947.
- [14] **Park, H. J.**, Y. Pichugin, and A. Traulsen, Why is cyclic dominance so rare?, *eLife*, (2020), 2020;9:e57857.
- [13] B. Wu, **Park, H. J.**, L. Wu, D. Zhou, Evolution of cooperation driven by self-recommendation, *Phys. Rev. E* 100 (2019) 042303.
- [12] Y. Pichugin, **Park, H. J.**, and A. Traulsen, Evolution of simple multicellular life cycles in dynamic environments, *J. Royal Soc. Interface* 16 (2019) 20190054.
- [11] **Park, H. J.**, Y. Pichugin, W. Huang, and A. Traulsen, Population size changes and extinction risk of populations driven by mutant interactors, *Phys. Rev. E* 99 (2019) 022305.
- [10] **Park, H. J.** and C. S. Gokhale, Ecological feedback on diffusion dynamics, *Royal Society Open Science* 6 (2019) 181273.
- [9] **Park, H. J.**, W. S. Jo, S. H. Lee, and B. J. Kim, Generalized Gravity Model for Human Migration, *New J. Phys.* 20 (2018) 093018.
- [8] S.-G. Yang, **Park, H. J.**, and B. J. Kim, Dynamic critical behavior of the one-dimensional XY model with long-range interaction, *Phys. Rev. E* 98 (2018) 032120.
- [7] **Park, H. J.** and A. Traulsen, Extinction dynamics from meta-stable coexistences in an evolutionary game, *Phys. Rev. E* 96 (2017) 042412.
- [6] **Park, H. J.**, B. J. Kim, H.-C. Jeong, Role of generosity and forgiveness: Return to cooperative society, *Phys. Rev. E* 95 (2017) 042314.
- [5] **Park, H. J.**, S. D. Yi, D. J. Kim, B. J. Kim, Network of likes and dislikes: Conflict and membership, *Physica A* 461 (2016) 647–654.
- [4] S. K. Baek, **Park, H. J.**, B. J. Kim, Anomalous response in the vicinity of spontaneous symmetry breaking, *Eur. Phys. J. B* 88 (2015) 127.

- [3] **Park, H. J.**, S. K. Baek, B. J. Kim, Stochastic resonance in the two-dimensional q-state clock models, Phys. Rev. E 89 (2014) 032137.
- [2] S. K. Baek, I. G. Yi, **Park, H. J.**, B. J. Kim, Statistics of the knockout tournament, Scientific Reports 3 (2013) 3198.
- [1] **Park, H. J.**, H. Sim, H.-H. Jo, B. J. Kim, Analysis of one-dimensional yut-nori game: winning strategy and avalanche-size distribution, J. Korean Phys. Soc. 63 (2013) 1497.

Honors

Partnership: Partner group of Max-Planck Institute for Evolutionary Biology, 2023 March-2028 February

Awards: Young Statistical Physicist Award from Korea Physics Society, Daejeon, Korea, 25 April 2018

Awards: Best Poster Award from Statphys26, Lyon, France, 18-22 July 2016

Awards: Best Presentation Award from Complexity Research and Education Network, Korea, 2013

Scholarships: Lotte Scholarship (2011-2, 2012-1)

Grants

2023 April-2026 March: ROK-Nordic R&D Cooperation Program.

2023 March-2028 February: MPI partner group grant.

2023 March-2026 February: National Research Foundation of Korea(NRF) grant funded by the Korea government (MSIT).

2022 April-2023 September: NRF-JSPS Bilateral Collaboration (Joint Seminar) 2022.

2020 September-2023 February: National Research Foundation of Korea(NRF) grant funded by the Korea government (MSIT).

Organizing

2023 November: Workshop "Workshop on the game theory and its applications", Lacasa Hotel, Gwangmyeong, Korea, November 23-25, 2023.

2023 August: Minisymposium "Symposium XI: Ecology and Evolution of Microbial Communities" at ICBP 2023, Seoul Olympic Parktel, Seoul, Korea, August 17-18, 2023.

2023 August: STATPHYS Satellite meeting "Collective Phenomena in complex systems: problems inspired by Ecology and Evolution (CoPhEE2023)", The University of Tokyo, Japan, August 12-14, 2023.

2023 March: Workshop "Internal MEEW 2023", KIAS, Seoul, Korea, March 8-9, 2023.

2022 October: Workshop "Modeling on Ecology and Evolution Workshop (MEEW)", KIAS, Seoul, Korea, October 27-29, 2022.

2022 September: Workshop "Roles of Heterogeneity in Nonequilibrium Collective Dynamics 2022 (RHINO2022)", Tokyo University, Tokyo, Japan, September 16-17, 2022. APCTP, Pohang, Korea, August 24-26, 2020.

2021 September: Workshop "Non-equilibrium collective phenomena workshop", APCTP, Gyeongju,

Korea, September 27-October 1, 2021. APCTP, Pohang, Korea, August 24-26, 2020.

2020 August: Workshop “Modeling on Ecology and Evolution”, APCTP, Pohang, Korea, August 24-26, 2020.

2020 June-Present: Seminar series “Modeling on Ecology and Evolution”, APCTP, Pohang, Korea, June 2020-present.

2019 September: Workshop “Evolution of interacting populations”, MPI for Evolutionary Biology, Plön, Germany, September 15-17, 2019.

2018-2020: Internal meeting “Monthly Academia”, MPI for Evolutionary Biology, Plön, Germany, October 2018-March 2020.

2017-2018: Internal meeting “Statistical Physics study group”, MPI for Evolutionary Biology, Plön, Germany, March 2017-February 2018.

2014 May-June: Assistant organizer of public talks “Let’s play with physics”, Sungkyunkwan University, Suwon, South Korea, May-June 2014.