

Hae Seong Lee | Curriculum Vitae

Statistical Physics Lab, Department of Physics – Sungkyunkwan University

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Research Interests

- Synchronization
- Spreading phenomena on networks
- Non-equilibrium dynamics of spin systems
- Dynamics in brain networks

Education

Ph.D. student in Physics

Sungkyunkwan University,
Supervisor: Prof. Beom Jun Kim

2019–present

B.S. in Physics

Sungkyunkwan University,

2013–2017

Publications

- [4] (*in preparation*) Jae Hyung Woo, Hae Seong Lee, Tae-Wook Ko and Joon-Young Moon, "Hysteresis in a Modified Kuramoto Model with a Simplified Realistic Coupling Function and Inhomogeneous Coupling Strengths"
- [3] (*in preparation*) Hae Seong Lee and Beom Jun Kim, "The effect of prior knowledge on vocabulary learning"
- [2] (*in press*) Hae Seong Lee, Beom Jun Kim, and Hye Jin Park "Stability of twisted states in power-law coupled Kuramoto oscillators on a circle with and without time-delay"
- [1] Hae Seong Lee, Jong Il Park, and Beom Jun Kim, "Modified Kuramoto model with inverse-square law coupling and spatial time delay", *Physica A* 582, 126263 (2021).

Presentations

International oral presentations

- [6] "Hysteresis in coupled identical oscillators with generalized coupling function and coupling strength inhomogeneity", Complex Networks 2023 (Menton, France, Nov. 28, 2023)
- [5] "Stability of twisted states in Kuramoto oscillators on a circle with power-law interaction strength", Roles of heterogeneity in non-equilibrium collective dynamics (RHINO 2022) (Tokyo, Japan, Sep. 18, 2022)
- [4] "Twisted states in Kuramoto oscillators on a circle with distance-decaying coupling strength", 15th Asia Pacific Physics Conference (Online, Aug. 22, 2022)
- [3] "Synchronization of oscillators with power-law coupling and spatial time delay", 2022 Korea-Canada Symposium and International Workshop on Multiplex Brain Networks (Calgary & Banff, Canada, Apr. 21, 2022)

- [2] "The central word set in a language", Networks 2021 (Online, Jul. 5, 2021)
- [1] "Modified Kuramoto model with power law coupling and spatial time delay", Conference on Complex Systems 2019 (NTU, Singapore, Sep. 30, 2019)

Domestic oral presentations.....

- [8] "Evolution of risk-taking strategy in von Neumann poker game", Workshop on the game theory and its applications (Gwangmyeong, South Korea, Nov. 24, 2023)
- [7] "Stability of Twisted States in Kuramoto Oscillators on a Circle with Distance-Decaying and Time-Delayed Coupling", 2023 Korean Physical Society Spring Meeting (Daejeon, Apr. 20, 2023)
- [6] "The compartment learning model and the core vocabulary in Korean language", 2021 Korean Physical Society Spring Meeting (Online, Apr. 22, 2021)
- [5] "A set of central words in Korean language", 2020 Korea Academy of Complexity Studies Fall Conference (Online, Nov. 28, 2020)
- [4] "A set of central words in Korean language", Joint mini-workshop on collective dynamics (Busan, South Korea, Nov. 12, 2020)
- [3] "A set of central words in Korean language", 2020 Korean Physical Society Fall Meeting (Online, Nov. 5, 2020)
- [2] "Modified Kuramoto model with power law coupling and site-dependent time delay", 2019 Korean Physical Society Fall Meeting (Gwangju, South Korea, Oct. 24, 2019)
- [1] "Modified Kuramoto model with power law coupling and spatial time delay", The 20th Workshop for Statistical Physics (Byeonsan, South Korea, Aug. 21, 2019)

International poster presentations.....

- [3] (accepted) "Why we sing in a round at a stadium: stability analysis of twisted states in Kuramoto oscillators on a circle", Netsci 2024 (Quebec, Canada, Jun. 17, 2024)
- [2] "Finding core vocabulary in a language", Statphys28 (Tokyo, Japan, Aug. 8, 2023)
- [1] "Effect of prior knowledge on vocabulary learning", Conference on Complex Systems 2022 (Palma, Spain, Oct. 18, 2022)

Domestic poster presentations.....

- [2] "Finding important words: Network analysis of a Korean dictionary", 2024 Korean Physical Society Spring Meeting (Daejeon, South Korea, Apr. 25, 2024).
- [1] "Emergence of twisted states in Kuramoto oscillators on a circle with power-law coupling strength", 2022 SKKU Physics Workshop (Suwon, South Korea, Nov. 30, 2022)

Honors & Awards

SKKU scholarship innovation	Sungkyunkwan University 2022
SKKU innovative research fellowship	Sungkyunkwan University 2022
Excellence project award	19th KIAS-APCTP Winter School on Statistical Physics 2022
Outstanding oral presentation award	2021 Korean Physical Society Spring Meeting 2021

Attended schools**International schools**

- (accepted) XII GEFENOL Summer School on Statistical Physics of Complex Systems**
Madrid, Spain, 2024
 Topic: Selected topics in complexity science
- (accepted) Complexity72h**
Madrid, Spain, 2024
 Topic: TBA
- Complex Networks: Theory, Methods, and Applications**
Como, Italy, 2024
 Topic: Selected topics in complex networks
- CSH Winter School 2023**
Obergurgl, Austria, 2023
 Topic: Integrative and Disintegrative Processes in Complex Human Societies
- VII Mediterranean school on complex networks**
Catania, Italy, 2022
 Topic: Selected topics in complex networks

Domestic schools

- 21st KIAS-APCTP Winter School on Statistical Physics**
Pohang, South Korea, 2024
 Topic: Selected topics in statistical physics on complex systems
- Complex systems summer school**
Seoul, South Korea, 2023
 Topic: Lectures on "Network Science" written by Barabasi
- 20th KIAS-APCTP Winter School on Statistical Physics**
Pohang, South Korea, 2023
 Topic: Statistical Physics of Quantum Systems
- 19th KIAS-APCTP Winter School on Statistical Physics**
Online, 2022
 Topic: Phase transitions and critical phenomena
- 18th KIAS-APCTP Winter School on Statistical Physics**
Online, 2021
 Topic: Kinetic models in statistical physics
- 17th KIAS-APCTP Winter School on Statistical Physics**
Pohang, South Korea, 2020
 Topic: Machine learning for statistical physics in practice
- 16th KIAS-APCTP Winter School on Statistical Physics**
Yeosu, South Korea, 2019
 Topic: critical phenomena and renormalization group

Experiences

Teaching Assistant.....

Thermal and Statistical Mechanics II: Spring 2020, Spring 2021

Thermal and Statistical Mechanics I: Fall 2020, Fall 2021

Analytical Mechanics II Exercise: Fall 2019

Analytical Mechanics II: Fall 2019

Analytical Mechanics I: Spring 2019

Military service.....

Technical Research Personnel: 2022-present

Skills

Programming languages: C, C++, Python, SQL, Matlab, Javascript

Computer skills: Monte-carlo simulation, Agent-based simulation, MPI programming, Networkx, Latex, Web designs