YOUNGHUN JO

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RESEARCH INTERESTS

Probability Theory, Dynamics

EDUCATION

Seoul National University (SNU) Mar 2019 – Feb 2025*
Bachelor of Science in Mathematics *Expected
Leave for Mandatory Military Service, Mar 2021 – Sep 2022

Seoul Science High School Feb 2016 – Feb 2019

PUBLICATIONS

[1] **Jo, Y.**, *The Eyring–Kramers Law for Extinction Time of Contact Process on Stars*. arXiv:2405.09501 (2024) Submitted.

RESEARCH EXPERIENCE

Metastability of Contact Processes [1] Sep 2022 – Oct 2024
Undergraduate Independent Research, Advisor: Professor Insuk Seo

- Investigated the potential-theoretic approach to metastability and its application to various stochastic models.
- Reviewed traditional methods for analyzing contact processes, including coupling and oriented percolation.
- Conducted a detailed energy landscape analysis for the contact process on star graphs by incorporating special function theoretic techniques and established the Eyring–Kramers law for the mean extinction time using the potential-theoretic approach to metastability.
- Received the Grand Prize (1st Award) from the SNU Faculty of Liberal Education in Fall 2023.

Arithmetic Dynamics of Polynomial Maps Aug 2023 – Oct 2024
Undergraduate Research Internship, Advisor: Professor Junho Peter Whang

- Studied the arithmetic dynamics of rational maps. Probed Silverman's approach to the equality of the field of definition and the field of moduli, addressing the cohomology structure of rational maps and the theory of algebraic curves. (notes)
- Examined sharp uniform bound on the periodic orbit size for integral polynomial maps on $\mathbb{Z}^2$. By developing a local–global principle for periodic orbit types, demonstrated the existence of large periodic orbits. (notes)

Extreme Value Theorem and Geodesic Coding for Generalized Continued Fractions Dec 2020 – Sep 2022
Undergraduate Research Internship, Advisor: Professor Seonhee Lim

- Studied the ergodic theory of the geodesic flow on modular surfaces and its connection to continued fractions through geodesic coding. Inquired Pollicott's extreme value theorem (EVT) on $\mathbb{H}^2/\operatorname{SL}_2\mathbb{Z}$, derived from Galambos's EVT for continued fractions. Surveyed the EVT for generalized continued fractions. (notes)

SELECTED TALKS*

The Eyring–Kramers Law for Extinction Time of Contact Process on Stars [1] (abstract) (slides) Oct 2024
2024 KMS Annual Meeting

Metastability of Contact Processes [1] (slides) Jul 2024
13th Cornell Probability Summer School

The Eyring–Kramers Law for Extinction Time of Contact Process on Stars [1] (abstract) (slides) Jun 2024
KIAS Analysis, PDE & Probability Seminar

Random Walks and Invariant Random Subgroups (slides) Nov 2024
SNU Dynamics Seminar

Two Dimensional Random-Cluster Model (notes) Aug 2023
Graduate Percolation & Random-Cluster Model Reading Seminar

*A full list of the talks and materials can be found here: starrysky422.github.io/talks

Honors & Awards

1st Award, Undergraduate Independent Research, SNU Faculty of Liberal Education — Fall 2023
Metastability of Contact Processes [1]

1st Place, Simon Marais Mathematics Competition*, Individuals Division — 2022
2nd Place in 2023
*Asia-Pacific Joint Undergraduate Mathematics Competition

The National Scholarship for Science and Engineering, Korea Student Aid Foundation — 2019 – Present

Dean's List, SNU College of Natural Sciences — 2019, 2020, 2023

Gold Medal, University Students' Contest of Mathematics, Korean Mathematical Society — 2019, 2020, 2021, 2023

Silver Medal, Korean Mathematical Olympiad — 2016, 2017

Teaching Experience

Teaching Assistant*, *Calculus Practice I* — Spring 2024
Seoul National University
*Delivered a two-hour lecture each week, designed four quizzes, and held regular office hours.

Lecturer, *Introduction to Category Theory* (notes) — Winter 2023
Winter Mentoring in College of Natural Sciences, SNU College of Natural Sciences

Lecturer, *Introduction to Mathematical Analysis (with practice) I* (notes) — Winter 2022
Major Tutoring School in College of Natural Sciences, SNU College of Natural Sciences

Teaching Assistant, Korean Mathematical Olympiad Training Camp — Summer 2019, Winter 2020

Attended Conferences & Workshops

(Scheduled) **Probability Workshop in Korea 2025,** SAARC — Jan 2025

(Scheduled) **Workshop on Probability and Mathematical Physics in Gimhae 2024,** KIAS — Dec 2024

The 17th HU-SNU Symposium on Mathematics, Seoul National University — Nov 2024

2024 KMS Annual Meeting, Korean Mathematical Society — Oct 2024

2nd China-Japan-Korea Joint Probability Workshop, SAARC — Oct 2024

13th Cornell Probability Summer School, Cornell University — Jul 2024 – Aug 2024

Workshop on Combinatorics and Probability, KIAS — Jun 2024

2024 Algebra Camp, QSMS — Feb 2024

Probability Workshop in Korea 2024, SAARC — Jan 2024

Probability Winter School in Korea 2023, KIAS — Dec 2023

KMS Special Conference with 2022 Fields Medalists, Korean Mathematical Society — Oct 2023

The 3rd International Undergraduate Mathematics Summer School, Seoul National University — Aug 2023

Random Structures & Algorithms 2023, Carnegie Mellon University — Jun 2023

Seminars & Reading Courses

SNU Probability Group Seminar — Sep 2023 – Present

Weekly Peer Mathematics Seminar — Oct 2023 – Present
Co-organized in Fall 2024

Graduate Exchange Seminar — Aug 2023 – Apr 2024
Supervisor: Professor Gyeseon Lee

Graduate Seminar on Diophantine Analysis — Aug 2023 – Nov 2023
Supervisor: Professor Junho Peter Whang

Graduate Percolation & Random-Cluster Model Reading Seminar — May 2023 – Aug 2023
Supervisor: Professor Insuk Seo