

# CURRICULUM VITAE

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## Basic Information

Name in full : Minho Song

Office : 51352D, Sungkyunkwan University, Suwon, South Korea

Research Area : algebraic combinatorics, combinatorial matrix theory

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## Positions

September 2023 – Present	Research fellow, Sungkyunkwan University.
May 2019 – August 2023	Post-doctoral fellow, AORC, Sungkyunkwan University.
May 2018 – April 2019	BK Post-doctoral fellow, Sungkyunkwan University.
March 2018 – April 2018	Post-doctoral fellow, Sungkyunkwan University.

## Education

March 2012 – February 2018 Ph.D. in Mathematics, Sungkyunkwan University.

*Advisor:* Prof. Gi-Sang Cheon

Thesis : “Riordan Lie Algebra and Extended Riordan groups”

March 2010 – February 2012 M.S. in Mathematics, Sungkyunkwan University.

*Advisor:* Prof. Gi-Sang Cheon

Thesis : “Geometric Progression Matrices and Generalizations”

March 2006 – February 2010 B.S. in Mathematics, Sungkyunkwan University.

## Research Interests

My research lies in algebraic combinatorics, with particular emphasis on Riordan group theory, symmetric functions, and the combinatorial structures arising in the theory of (generalized) orthogonal polynomials. I am also interested in problems concerning Kemeny’s constant for finite Markov chains.

## Research Activities

### Preprints

- *Combinatorics of generalized orthogonal polynomials of type  $R_{II}$*  (with Jang Soo Kim), arXiv:2411.12345.

## Published/Accepted Papers

- *Combinatorics of orthogonal polynomials on the unit circle* (with Jihyeug Jang), The Ramanujan Journal, 68:84 (2025), 1–36.
- *Combinatorial reciprocity for Riordan arrays* (with Jihyeug Jang and Louis W. Shapiro), Linear Algebra and its Applications, 721 (2025), 419–448.
- *Kemeny's constant and enumerating Braess edges in trees* (with Jihyeug Jang, Mark Kempton, Sooyeong Kim, Adam Knudson, and Neal Madras), Linear & Multilinear Algebra, 73(8) (2025), 1529–1565.
- *Refined canonical stable Grothendieck polynomials and their duals, Part 2* (with Byung-Hak Hwang, Jihyeug Jang, Jang Soo Kim, and U-Keun Song), European Journal of Combinatorics, 127 (2025), 104166.
- *Strictly monotone sequences of lower and upper bounds on Perron values and their combinatorial applications* (with Sooyeong Kim), Linear & Multilinear Algebra, 73(2) (2025), 1–29.
- *Refined canonical stable Grothendieck polynomials and their duals, Part 1* (with Byung-Hak Hwang, Jihyeug Jang, Jang Soo Kim, and U-Keun Song), Advances in Mathematics, 446 (2024), 109670.
- *A Riordan group poset* (with Louis W. Shapiro), Linear Algebra and its Applications, 689 (2024), 66–85.
- *Kemeny's constant and Wiener index on trees* (with Jihyeug Jang and Sooyeong Kim), Linear Algebra and its Applications, 674 (2023), 230–243.
- *Negative moments of orthogonal polynomials* (with Jihyeug Jang, Donghyun Kim, Jang Soo Kim, and U-Keun Song), Forum of Mathematics, Sigma 11 (2023), Paper No. e22, 34 pp.
- *Enumeration of bipartite non-crossing geometric graphs* (with Gi-Sang Cheon, Hong Joon Choi, Guillermo Esteban), Discrete Applied Mathematics, 317(2022), 86–100.
- *A new aspect of Riordan arrays via Krylov matrices* (with Gi-Sang Cheon), Linear Algebra and its Applications, 554 (2018), 329–341.
- *Finite and infinite dimensional Lie group structures on Riordan groups* (with Gi-Sang Cheon, Ana Luzón, Manuel A. Morón, Luis Felipe Prieto-Martínez), Advances in Mathematics, 319 (2017), 522–566.

## Workshops Attended

- *Mathematical Modeling in Industry XIX*, University of Minnesota, August 5–14, 2015.

## Conference Talks

- *A unified combinatorial framework for orthogonal polynomials including type  $R_{II}$* , The 34th KIAS Combinatorics Workshop, May 29–31, Jeju, South Korea.

- *Two Rational Catalan Objects*, 2025 KSIAM Spring Conference, May 16–18, Konkuk University, South Korea.
- *Combinatorics of generalized orthogonal polynomials of type  $R_{II}$* , 2025 KMS Spring Meeting, April 24–26, KAIST, South Korea.
- *Combinatorics of the orthogonal polynomials on the unit circle (OPUC)*, 2024 Combinatorics Workshop, August 28–30, 2024, Chungbuk National University, South Korea.
- *About Riordan group posets*, The 9th International Symposium on Riordan Arrays and Related Topics (9RART), June 3–5, 2024, Howard University, USA.
- *Combinatorial reciprocity for Riordan arrays*, The 30th KIAS Combinatorics Workshop, March 8–9, 2024, KIAS, South Korea.
- *Combinatorics on the negative part of Riordan matrices*, The 25th Conference of the International Linear Algebra Society, June 12–16, 2023, Madrid, Spain.
- *Enumerative results for connected bipartite non-crossing geometric graphs*, The 24th Conference of the International Linear Algebra Society, June 20–24, 2022, Ireland.
- *Enumeration of connected bipartite non-crossing geometric graphs*, 2021 KMS Spring Meeting, April 29–30, 2021, South Korea (Online).
- *Riordan group theory and connected bipartite non-crossing graphs*, 2020 Gyeonggi-Incheon Combinatorics Workshop, November 27, 2020, South Korea (Online).
- *A relation between strongly connected tournaments and connected graphs*, The 6th International Workshop on Riordan Arrays and Related Topics, July 1–5, 2019, TSIMF, Sanya, China.
- *A proof of an open problem on the commutator subgroup of the Riordan group*, Joint Mathematics Meetings, January 16–19, 2019, Baltimore, USA.
- *A new aspect of the Riordan group via Krylov matrices*, The 3rd International Symposium on Riordan Arrays and Related Topics, June 20–23, 2016, Illinois Wesleyan University, USA.
- *Lie Theory in the Riordan group*, East Asian Core Doctoral Forum on Mathematics, January 18–21, 2015, National Taiwan University, Taiwan.
- *Krylov matrices versus orthogonal polynomials*, The Second International Symposium on Riordan Arrays and Related Topics, July 14–16, 2015, Campus Lecco, Politecnico di Milano, Italy.
- *The Riordan Lie algebra*, 2014 KMS Annual Meeting, October 24–25, 2014, Yonsei University, South Korea.
- *On the commutator subgroup of the Riordan group*, The 19th Conference International Linear Algebra Society, August 6–9, 2014, Sungkyunkwan University, South Korea.
- *The Riordan Lie group and the corresponding Lie algebra*, 2014 Kangwon-Kyungki Mathematical Society Meeting, June 20, 2014, Incheon National University, South Korea.

- *Geometric progression matrices and an application to the orthogonal polynomials*, 2014 AKOOS-PNU International Conference, February 5–7, 2014, Pusan National University, South Korea.

## Academic Event Organization

- Co-Organizer, *Intensive Workshop on Algebraic Combinatorics*, Department of Mathematics, Sungkyunkwan University, January 14–18, 2025.
- Co-Organizer, *Intensive Workshop on Enumerative Combinatorics*, Department of Mathematics, Sungkyunkwan University, January 24–28, 2022.

## Honors and Awards

- *Sejong Science Fellowship* from National Research Foundation of Korea, March 2022 – February 2027.
- *Creativity Challenge Research* from National Research Foundation of Korea, June 2019 – May 2022.
- *Doctoral Dissertation Award* from Korean Mathematical Society, April 21, 2018.
- *2014 AKOOS-PNU International Conference Best Presentation Award* from Pusan National University, February 7, 2014.
- *BK21 Scholarship Program for graduate students* from National Research Foundation of Korea, March 2010 – February 2016.
- *Global Ph.D Fellowship* from National Research Foundation of Korea, March 2010 – February 2013.

Date: November 15, 2025