Curriculum Vitae

Basic Information

Name in full : Minho Song
Office : 51304, Sungkyunkwan University, Suwon, South Korea
Research Area : Combinatorial Matrix Theory

Email: smh3227@skku.edu

Positions

September 2023 – Present	Post-doctoral 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

I mainly focus on the use of Riordan group theory on problems arising in combinatorics, matrix theory and related topics. Other research interests of mine include algebraic and enumerative combinatorics, graph theory, matrix theory, and their applications.

Research Activities

Papers - submitted

- *Refined canonical stable Grothendieck polynomials and their duals, Part 2* (with Byung-Hak Hwang, Jihyeug Jang, Jang Soo Kim, and U-Keun Song), arXiv:2404.02483.
- *Combinatorial reciprocity for Riordan arrays* (with Jihyeug Jang and Louis W. Shapiro).
- *Kemeny's constant and enumerating Braess edges in trees* (with Jihyeug Jang, Mark Kempton, Sooyeong Kim, Adam Knudson, and Neal Madras), arXiv:2309.02977.

- *Strictly monotone sequences of lower and upper bounds on Perron values and their combinatorial applications* (with Sooyeong Kim), to appear in Linear & Multilinear Algebra, arXiv:2207.06016.

Papers - published

- *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 G.-S Cheon, H. Choi, G. Esteban), Discrete Applied Mathematics, Discrete Applied Mathematics, 317(2022), 86–100.
- *A new aspect of Riordan arrays via Krylov matrices* (with G.-S Cheon), Linear Algebra and its Applications, 554 (2018), 329–341.
- *Finite and infinite dimensional Lie group structures on Riordan groups* (with G.-S. Cheon, A. Luzon, M. A. Moron, L. F. Prieto-Martinez), Advances in Mathematics,319 (2017), 522–566.

Workshops Attended

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

Conference talks

- *Combinatorial reciprocity for Riordan arrays*, 30th KIAS combinatorics workshop, March 8–9, 2024, KIAS, South Korea.
- *Combinatorics on the negative part of Riordan matrices*, 25th Conference of the International Linear Algebra Society, June 12–16, 2023, Madrid, Spain.
- *Enumerative results for connected bipartite non-crossing geometric graphs*, 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*, 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*, 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 Doctorial Forum on Mathematics, January 18–21, 2015, National Taiwan University, China.
- *Krylov matrices versus orthogonal polynomials*, 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, Inchoen 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.

Honors and Awards

- *Sejong Science Fellowship* from National Research Foundation of Korea, March 2022 – February 2025.
- *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 : July 5, 2024