Byung-Hak Hwang

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Research interests

- Algebraic combinatorics, Representation theory.

Education and Employment

- **Research Fellow, Korea Institute for Advanced Study**
  May 2024 –

  Mentor: Hyun Kyu Kim
- **Alternative Military Service**
  April 2021 – April 2024
- **Research Fellow, Applied Algebra and Optimization Research Center**
  September 2020 – March 2021

  Mentor: Jang Soo Kim
- **Ph.D. Mathematics, Seoul National University**
  March 2014 – August 2020

  Advisor: Woong Kook
- **B.S. Double major in Mathematics, and Electric & Computer Engineering, Seoul National University**
  March 2009 – February 2014

Publications

Journal publications and preprints

8. *Refined canonical stable Grothendieck polynomials and their duals, Part 2* (with J. Jang, J. S. Kim, M. Song, U-K. Song)
   preprint, arXiv:2404.02483, submitted.

7. *Noncommutative symmetric functions and skewing operators*
   preprint, arXiv:2305.08132, submitted.

6. *Refined canonical stable Grothendieck polynomials and their duals, Part 1* (with J. Jang, J. S. Kim, M. Song, U-K. Song)
   Advances in Mathematics, 446:Paper No. 109670, 42, 2024.

5. *Chromatic quasisymmetric functions and noncommutative P-symmetric functions*
   Transactions of the American Mathematical Society, 377(4):2855–2896, 2024.

4. *A combinatorial model for the transition matrix between the Specht and SL_2-web bases* (with J. Jang and J. Oh)
   Forum of Mathematics, Sigma, 11 (2023), E82.

3. *Acyclic orientation polynomials and the sink theorem for chromatic symmetric functions* (with W.-S. Jung, K.-J. Lee, J. Oh, and S.-H. Yu)
   Journal of Combinatorial Theory, Series B, 149 (2021), 52-75.

2. *On linearization coefficients of q-Laguerre polynomials* (with J. S. Kim, J. Oh, and S.-H. Yu)
   The Electronic Journal of Combinatorics, Volume 27, Issue 2 (2020), P2.22.

1. *Reverse plane partitions of skew staircase shapes and q-Euler numbers* (with J. S. Kim, M. Yoo, and S.-m. Yun)
   Journal of Combinatorial Theory, Series A, 168 (2019), 120-163.

Conference proceedings

6. *Refined canonical stable Grothendieck polynomials and their duals* (with J. S. Kim, J. Jang, M. Song, and U-K. Song)
   Proceedings of FPSAC 2023.

5. *Chromatic quasisymmetric functions and noncommutative P-symmetric functions*
   Proceedings of FPSAC 2023.

4. *A combinatorial model for the transition matrix between the Specht and web bases* (with J. Jang, and J. Oh)
   Proceedings of FPSAC 2022.

3. *Acyclic orientation polynomials and the sink theorem for chromatic symmetric functions* (with W.-S. Jung, K.-J. Lee, J. Oh, and S.-H. Yu)
   Proceedings of FPSAC 2020.

2. *On linearization coefficients of q-Laguerre polynomials* (with J. S. Kim, J. Oh, and S.-H. Yu)
   Proceedings of FPSAC 2020.

1. *Reverse plane partitions of skew staircase shapes and q-Euler numbers* (with J. S. Kim, M. Yoo, and S.-m. Yun)
   Proceedings of FPSAC 2018.

Presentations

- The theory of noncommutative symmetric functions, Topology and Combinatorics seminar at Ajou University, June 2024
- Logarithmic concavity of Kazhdan–Lusztig $\widetilde{R}$-polynomials, Workshop for Young Representation Theorist in Korea, December 2023
- Chromatic quasisymmetric functions and noncommutative P-symmetric functions, FPSAC 2023, July 2023
- Chromatic quasisymmetric functions and noncommutative P-symmetric functions, Combinatorics on flag varieties and related topics 2023, February 2023
- A proof of Harada–Precup's conjecture, SKKU Combinatorics seminar, November 2020
- Acyclic orientation polynomials, 2020 KMS Annual Meeting, October 2020

- Positivity in symmetric functions, AORC Monthly seminar, September 2020
- Chromatic quasisymmetric functions and noncommutative P-symmetric functions, Topology and Combinatorics seminar at Ajou University, September 2020
- Acyclic orientation polynomials, 2020 Combinatorics Workshop, August 2020
- Acyclic orientation polynomials and the sink theorem for chromatic symmetric functions (poster), The 32nd international conference on Formal Power Series and Algebraic Combinatorics (online), July 2020
- Reverse plane partitions of skew staircase shapes and a modification of Lindstörm–Gessel–Viennot lemma, The 18th KIAS Combinatorics Workshop, 2017