

# Jang Soo Kim

## Contact Information

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## Research Area

Enumerative Combinatorics and Algebraic Combinatorics

## Positions

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2022/9 - current	Professor, Sungkyunkwan University
2015/9 - 2022/8	Associate Professor, Sungkyunkwan University
2014/3 - 2015/8	Assistant Professor, Sungkyunkwan University
2013/6 - 2014/2	Research Fellow, KIAS
2010/9 - 2013/5	Dunham Jackson Assistant Professor School of Mathematics, University of Minnesota
2009/3 - 2010/7	CNRS postdoctor (mentor: Sylvie Corteel) at LIAFA, University of Paris 7

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## Education

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2003/3 - 2009/1	Ph.D. in Mathematical Sciences, KAIST (advisor : Dongsu Kim)
1999/3 - 2003/2	B.S. in Mathematics, KAIST

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## Service

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Sungkyunkwan University	2024 Jan - current: Department Chair
Discrete Mathematics	2020 Nov - current: Associate Editor
Combinatorial Theory	2020 Nov - current: Handling Editor
Annals of Combinatorics	2019 Sep - current: Editor
FPSAC	2019 Sep - current: Executive Committee member
KIAS Combinatorics Workshop	2016 Aug - current: Organizer

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## Papers

### Preprints

- Enumeration of multiplex juggling card sequences using generalized  $q$ -derivatives (with Yumin Cho, Jaehyun Kim, and Nakyung Lee), arXiv:2402.09903
- Lecture hall graphs and the Askey scheme (with Sylvie Corteel, Bhargavi Jonnadula, Jonathan Keating), arXiv:2311.12761
- Bounded Littlewood identities for cylindric Schur functions (with JiSun Huh, Christian Krattenthaler, Soichi Okada), arXiv:2301.13117
- Three families of  $q$ -Lommel polynomials (with Dennis Stanton), arXiv:2105.10096
- Refined canonical stable Grothendieck polynomials and their duals (with Byung-Hak Hwang, Jihyeug Jang, Minho Song, and U-Keun Song), arXiv:2104.04251
- Characteristic polynomials of the weak order on classical and affine Coxeter groups (with Sun-mi Yun), to appear in *Order*, arXiv:2204.01310

### 2024

- Extended commonality of paths and cycles via Schur convexity (with Joonkyung Lee), *J. Combin. Theory Ser. B* 166 (2024), 109–122, arXiv:2210.00977

### 2023

- Combinatorics of orthogonal polynomials of type  $R_I$  (with Dennis Stanton), *Ramanujan Journal* 61 (2023), no. 2, 329–390, arXiv:2009.14475
- Enumeration of standard barely set-valued tableaux of shifted shapes (with Michael Schlosser and Meesue Yoo), *European Journal of Combinatorics* 112 (2023), Paper No. 103727, arXiv:2006.03253
- Negative moments of orthogonal polynomials (with Jihyeug Jang, Donghyun Kim, Minho Song, U-Keun Song), *Forum of Mathematics, Sigma* 11 (2023), Paper No. e22, 34 pp, arxiv:2201.11344
- Weight multiplicities and Young tableaux through affine crystals (with Kyu-Hwan Lee and Se-jin Oh), *Memoirs of the American Mathematical Society*, Volume 283 (2023), no 1401, arXiv:1703.10321

### 2022

- Symmetric Pascal matrices and related graphs (with Gi-Sang Cheon, Seyed Ahmad Mojallal, Meesue Yoo), *Linear and Multilinear Algebra* 70 (2022), no. 21, 6345–6357
- Jacobi–Trudi formulas for flagged refined dual stable Grothendieck polynomials, *Algebraic Combinatorics*, Volume 5 (2022) no. 1, pp. 121–148, arXiv:2008.12000
- Enumeration of Gelfand–Cetlin type reduced words (with Yunhyung Cho and Eunjeong Lee), *Electronic J. Combin.* 29(1)(2022), #P1.27, arXiv:2009.06906

### 2021

- Generalized Schur function determinants using the Bazin identity (with Meesue Yoo), *SIAM J. Discrete Math.* 35 (2021), no. 3, 1650–1672, arXiv:2012.08741
- Whitney numbers for poset cones (with Galen Dorpalen-Barry and Vic Reiner), *Order* 38 (2021), no. 2, 283–322, arXiv:1906.00036
- Jacobi–Trudi formula for refined dual stable Grothendieck polynomials, *J. Combin. Theory Ser. A* 180 (2021), 105415, arXiv:2003.00540
- Volumes of generalized Chan–Robbins–Yuen polytopes (with Sylvie Corteel and Karola Mészáros), *Discrete & Computational Geometry*, 65, 510–530 (2021), arXiv:1704.02701

## 2020

- Volumes of flow polytopes related to caracol graphs (with Jihyeug Jang), *Electronic J. Combin.* 27(4)(2020), #P4.21, arXiv:1911.10703
- Lecture hall tableaux (with Sylvie Corteel), *Adv. Math.* 371 (2020) 107266, arXiv:1804.02489
- On linearization coefficients of  $q$ -Laguerre polynomials (with Byung-Hak Hwang, Jaeseong Oh and Sang-Hoon Yu), *Electronic J. Combin.* 27(2)(2020), #P2.22, arXiv:2001.01930
- Enumeration of bounded lecture hall tableaux (with Sylvie Corteel), *Séminaire Lotharingien de Combinatoire* B81f (2020), 28 pp, arXiv:1904.10602
- Product formulas for certain skew tableaux (with Meesue Yoo), *European J. Combin.* 84 (2020), 103038, arXiv:1806.01525

## 2019

- Reverse plane partitions of skew staircase shapes and  $q$ -Euler numbers (with Byung-Hak Hwang, Meesue Yoo and Sun-mi Yun), *J. Combin. Theory Ser. A* 168 (2019), 120–163, arXiv:1711.02337
- Hook length property of  $d$ -complete posets via  $q$ -integrals (with Meesue Yoo), *J. Combin. Theory, Ser. A* 162 (2019), 167–221, arXiv:1708.09109

## 2018

- Proof of Chapoton's conjecture on Newton polygons of  $q$ -Ehrhart polynomials (with U-Keun Song), *Electronic J. Combin.* 25(2)(2018), #P2.51 arXiv:1704.05621
- Spectral properties of Pascal graphs (with Gi-Sang Cheon and Seyed Ahmad Mojallal), *Linear and Multilinear Algebra* 66 (2018), 1403–1417
- On the  $f$ -vectors of Gelfand-Cetlin polytopes (with Byung Hee An and Yunhyung Cho), *European J. Combin.* 67 (2018), 61–77, arXiv:1606.05957

## 2017

- Colored permutations with no monochromatic cycles (with Dongsu Kim and Seunghyun Seo), *J. Korean Math. Soc.* 54 (2017), No. 4, pp. 1149–1161
- Flow polytopes with Catalan volumes (with Sylvie Corteel and Karola Meszaros), *Comptes Rendus Mathématique* 355(3) (2017), 248–259, arXiv:1612.00102
- On  $q$ -integrals over order polytopes (with Dennis Stanton), *Adv. Math.* 308(21) (2017), 1269–1317, arXiv:1608.03342
- A new  $q$ -Selberg integral, Schur functions, and Young books (with Soichi Okada), *Ramanujan Journal* 42 (2017), 43–57, arXiv:1412.7914
- The Selberg integral and Young books (with Suho Oh), *J. Combin. Theory Ser. A* 145 (2017), 1–24, arXiv:1409.1317

## 2016

- Moments of orthogonal polynomials and combinatorics (with Sylvie Corteel and Dennis Stanton), a book chapter, *IMA Volumes in Mathematics and its Applications* Vol. 159, Springer
- Combinatorial proof of a partial theta function identity of Warnaar (with Kathy Ji and Byungchan Kim), *Int. J. Number Theory* 12, 1475–1482 (2016)
- Generalized Dyck tilings (with Matthieu Josuat-Vergès), *European J. Combin.* 51 (2016), 458–474, arXiv:1410.1270

## 2015

- The combinatorics of associated Laguerre polynomials (with Dennis Stanton), *SIGMA* 11 (2015), 039, arXiv:1501.03880
- Bootstrapping and Askey-Wilson polynomials (with Dennis Stanton), *J. Math. Anal. Appl.*, 421 (2015), 501-520, arXiv:1403.0053

## 2014

- Moments of Askey-Wilson polynomials (with Dennis Stanton), *J. Combin. Theory Ser. A* 125 (2014), 113-145, arXiv:1207.3446
- Annular noncrossing permutations and minimal transitive factorizations (with Seunghyun Seo and Heesung Shin), *J. Combin. Theory Ser. A* 124 (2014), 251-262, arXiv:1201.5703
- Dyck tilings, increasing trees, descents, and inversions (with Karola Mészáros, Greta Panova, David B. Wilson), *J. Combin. Theory Ser. A* 122 (2014), 9-27, arXiv:1205.6578

## 2013

- Crossings of signed permutations and  $q$ -Eulerian numbers of type B (with Sylvie Corteel and Matthieu Josuat-Vergès), *Journal of Combinatorics* 4 (2013), no. 2, 191-228, arXiv:1203.0154
- Cyclic sieving phenomenon on annular noncrossing permutations, *Seminaire Lotharingien de Combinatoire* B69b (2013), 20 pp, arXiv:1210.7353
- Bijections on rooted trees with fixed size of maximal decreasing subtrees, *Annals of Combinatorics* 17 (2013), no. 2, 339-352, arXiv:1108.6038
- Touchard-Riordan formulas, T-fractions, and Jacobi's triple product identity (with Matthieu Josuat-Vergès), *Ramanujan J.* 30 (2013), no. 3, 341-378, arXiv:1101.5608

## 2012

- Enumeration formulas for generalized  $q$ -Euler numbers, *Adv. App. Math.* 49 (2012), 326-350, arXiv:1104.4584
- Proofs of two conjectures of Kenyon and Wilson on Dyck tilings, *J. Combin. Theory Ser. A* 119 (2012), 1692-1710, arXiv:1108.5558

## 2011

- Combinatorial rigidity of 3-dimensional simplicial polytopes (with Suyoung Choi), *Int. Math. Res. Notices* 2011 (2011), 1935-1951, arXiv:1002.0828
- Bijections on two variations of noncrossing partitions, *Discrete Math.*, 311 (2011), 1057-1063, arXiv:0812.4091
- Front representation of set partitions, *SIAM J. Discrete Math.* 25 (2011), 447-461, arXiv:0907.1485
- Combinatorics on permutation tableaux of type A and type B (with Sylvie Corteel), *European J. Combin.* 32 (2011), 563-579, arXiv:1006.3812
- New interpretations for noncrossing partitions of classical types, *J. Combin. Theory Ser. A* 118 (2011), 1168-1189, arXiv:0910.2036
- $q$ -analog of tableau containment, *J. Combin. Theory Ser. A* 118 (2011), 1021-1038, arXiv:0812.1256
- Chain enumeration of  $k$ -divisible noncrossing partitions of classical types, *J. Combin. Theory Ser. A* 118 (2011), 879-898, arXiv:0908.2641

## 2010

- A note on 2-distant noncrossing partitions and weighted Motzkin paths (with Ira M. Gessel), *Discrete Math.* 310 (2010), 3421-3425, arXiv:1003.5301

- A combinatorial approach to the power of 2 in the number of involutions (with Dongsu Kim), *J. Combin. Theory Ser. A* 117 (2010), 1082-1094, arXiv:0902.4311
- A note on the total number of cycles of even and odd permutations, *Discrete Math.* 310 (2010), 1398-1400, arXiv:0909.0683
- A combinatorial proof of a formula for Betti numbers of a stacked polytope (with Suyoung Choi), *Electron. J. Combin.* 17 (2010), #R9, arXiv:0902.2444
- Skew domino Schensted algorithm and sign-imbalance, *European J. Combin.* 31 (2010), 210-229, arXiv:0711.1035

## 2009

- $k$ -distant crossings and nestings of matchings and partitions (with Dan Drake), *DMTCS proc., AK (FPSAC 2009)* 349-360, arXiv:0812.2725

## 2007

- The initial involution patterns of permutations (with Dongsu Kim), *Electron. J. Combin.* 14 (2007), #R2

## Unpublished manuscript

- Ratios of Hahn-Exton  $q$ -Bessel functions and  $q$ -Lommel polynomials (with Dennis Stanton), arXiv:2006.08120