Curriculum Vitae of Mihyun KANG

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Institute of Discrete Mathematics
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Research fields

Combinatorics, Discrete Probability, Algorithms:

probabilistic combinatorics, enumerative combinatorics, analytic combinatorics;
random planar graphs, random graphs and hypergraphs, random simplicial complexes;
efficient sampling algorithms, randomised algorithms, analysis of algorithms

Academic positions and qualification

since Jan 2012	Full professor, Graz University of Technology (TU Graz), Austria
Apr–Sep 2011	Acting professor, University of Munich (LMU), Germany
2008–2011	Heisenberg fellow of German Research Foundation (DFG),
	Free University Berlin, Germany; New York University, USA; University of Oxford, UK
2001–2008	Postdoc/Privatdozentin, Humboldt University of Berlin (HU), Germany
Jul 2007	Habilitation in Computer Science, Humboldt University of Berlin, Germany
Aug 2001	PhD in Mathematics, Korea Advanced Institute of Science and Technology (KAIST)

Honours and awards

2019	Friedrich Wilhelm Bessel Research Award of Alexander von Humboldt Foundation
2019	Visiting Research Fellowship of Merton College, University of Oxford (research stay in Hilary term 2023)
since 2016	Member of the International Mathematical Union (IMU) Circle
2015	Special Contribution Award, Korean Mathematical Society
2008	Heisenberg Fellowship of German Research Foundation

Editorial activities

since 2020	Editorial board of *Random Structures & Algorithms*
since 2020	Editorial board of *Combinatorial Theory*
since 2019	Editorial board of *Annals of Combinatorics*
since 2018	Series editor of *Mathematik Kompakt* – Springer
since 2013	Editor of *Online Journal of Analytic Combinatorics*
2012–2023	Editor-in-Chief of *Discrete Mathematics & Theoretical Computer Science*
2011–2016	Associate editor of *SIAM Journal on Discrete Mathematics*

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Research grants

2024–2028	FWF SFB "Discrete random structures: enumeration and scaling limits", project part "Phase transitions in random combinatorial structures"
2024–2028	FWF doc.funds "Discrete Mathematics in Teams", topic "Bootstrap percolation in high-dimensional product graphs" and topic "Expected Complexity of Topological Summaries"
2023–2026	Austrian-German joint project "Sparse random combinatorial structures"
2018–2022	Austrian-German DACH-project "Random graphs: cores, colourings and contagion"
2015–2024	FWF Doctoral Program "Discrete Mathematics" (Phases II and III), project 15 "Random graphs on a surface"
2015–2019	FWF project "Asymptotic properties of graphs on a surface"
2014–2017	FWF project "Phase transitions and critical phenomena in random graphs"
2011–2014	DFG project "Phase transitions in random graphs"

Committee for international conferences

- International Oversight Committee of Conference on Random Structures & Algorithms, since 2022
- Program Committee: CanaDAM 2025, ÖMG Meeting 2023, SODA 2020/2009, ANALCO 2019/2017, AofA 2020/2016/2014
- Organising Committee/Co-organiser:
  - 22nd International Conference on Random Structures & Algorithms 2025
  - Oberwolfach Workshop on Random Graphs 2023
  - Banff Workshop on Random Graphs and Statistical Inference 2021 (virtual)
  - Symposium Diskrete Mathematik 2018
  - European Conference on Combinatorics, Graph Theory and Applications (Eurocomb) 2017
  - International Congress of Mathematicians 2014

Selected plenary/keynote/invited talks

(Link to the list of all invited talks: https://www.math.tugraz.at/~kang/talks.pdf)

- 20th International Conference on Random Structures & Algorithms, Gniezno, Poland, 2022
- Rényi 100, Section Random Graphs and Networks II, Budapest, Hungary, 2022
- 46th Intl. Workshop on Graph-Theoretic Concepts in Computer Science (virtual), Leeds, UK, 2020
- CMI Workshop on Recent Advances in Extremal Combinatorics, Oxford, UK, 2018
- 29th Conference on Analysis of Algorithms, Uppsala, Sweden, 2018
- STAR Workshop on Random Graphs, Utrecht, The Netherlands, 2017
- 27th Conference on Formal Power Series and Algebraic Combinatorics, KAIST, Korea, 2015
- Erdős Centennial, Section Random Discrete Structures, Budapest, Hungary, 2013
- 24th Conference on Analysis of Algorithms, Menorca, Spain, 2013

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Selected publications

(Link to the list of all publications: https://www.math.tugraz.at/~kang/papers.pdf)

- S. Diskin, J. Erde, M. Kang, and M. Krivelevich. Isoperimetric inequalities and supercritical percolation on high-dimensional product graphs, *Combinatorica* (2024), to appear.
- J. Erde, M. Kang, and M. Krivelevich. Expansion in supercritical random subgraphs of the hypercube and its consequences, *Annals of Probability* 51 (2023), 127-156.
- M. Kang and M. Missethan, Concentration of maximum degree in random planar graphs, *J. Combin. Theory Ser. B* 156 (2022), 310-342.
- N. Fountoulakis, M. Kang, and T. Makai, Resolution of a conjecture on majority dynamics: rapid stabilisation in dense random graphs, *Random Structures & Algorithms* 57 (2020), 1134-1156.
- M. Kang, M. Moßhammer, and P. Sprüssel, Phase transitions in graphs on orientable surfaces, *Random Structures & Algorithms* 56 (2020), 1117–1170.
- O. Cooley, N. Del Giudice, M. Kang, and P. Sprüssel, Vanishing of cohomology groups of random simplicial complexes, *Random Structures & Algorithms* 56 (2020), 461–500.
- C. Dowden, M. Kang, and M. Krivelevich, The genus of the Erdős-Rényi random graph and the fragile genus property, *Random Structures & Algorithms* 56 (2020), 97–121.
- A. Coja-Oghlan, O. Cooley, M. Kang, and K. Skubch, Core forging and local limit theorems for the k-core of random graphs, *Journal of Combinatorial Theory, Series B* 137 (2019), 178–231.
- O. Cooley, M. Kang, and C. Koch, The size of the giant high-order component in random hypergraphs, *Random Structures & Algorithms* 53 (2018), 238–288.
- M. Behrisch, A. Coja-Oghlan, and M. Kang, Local limit theorems for the giant component of random hypergraphs, *Combinatorics, Probability and Computing* 23 (2014), 331–366.
- M. Kang, W. Perkins, and J. Spencer, The Bohman-Frieze process near criticality, *Random Structures & Algorithms* 43 (2013), 221–250.
- M. Kang and T. Łuczak, The two critical phase of a random planar graph, *Transactions of the American Mathematical Society* 364 (2012), 4239–4265.
- M. Kang and C. McDiarmid, Random unlabelled graphs containing few disjoint cycles, *Random Structures & Algorithms* 38 (2011), 174–204.
- M. Bodirsky, É. Fusy, M. Kang, and S. Vigerske, Boltzmann samplers, Pólya theory and cycle pointing, *SIAM Journal on Computing* 40 (2011), 721–769.
- M. Behrisch, A. Coja-Oghlan, and M. Kang, The order of the giant component of random hypergraphs, *Random Structures & Algorithms* 36 (2010), 149–184.
- M. Kang and M. Loebl, The enumeration of planar graphs via Wick's theorem, *Advances in Mathematics* 221 (2009), 1703–1724.
- M. Kang and T. Seierstad, The critical phase for random graphs with a given degree sequence, *Combinatorics, Probability and Computing* 17 (2008), 67–86.
- M. Bodirsky, M. Kang, M. Löffler, and C. McDiarmid, Random cubic planar graphs, *Random Structures & Algorithms* 30 (2007), 78–94.