

# Curriculum Vitae of Mihyun Kang

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Graz University of Technology  
Institute of Discrete Mathematics  
Combinatorics Group  
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## Research fields

Combinatorics, Discrete Probability, Algorithms:

analytic, enumerative, and probabilistic combinatorics; random graphs and hypergraphs; random graphs on surfaces; random simplicial complexes; analysis of algorithms

## Academic positions and qualification

- 2012– Full professor, Graz University of Technology, Austria
- 2011 Substitute professor, University of Munich, Germany
- 2008–2011 Heisenberg fellow of German Research Foundation,  
Free University Berlin, Germany (Host: Günter Ziegler);  
New York University, USA (Host: Joel Spencer);  
University of Oxford, UK (Host: Colin McDiarmid)
- 2001–2008 Postdoc/Privatdozentin, Humboldt University of Berlin, Germany  
(Research Group of Hans Jürgen Prömel)
- 2007 Habilitation in Computer Science, Humboldt University of Berlin, Germany
- 2001 Ph.D. in Mathematics, Korea Advanced Institute of Science and Technology

## Honours and awards

- 2019 Visiting Research Fellowship of Merton College (for Hilary Term 2021),  
University of Oxford, UK
- 2019 Friedrich Wilhelm Bessel Research Award of Alexander von Humboldt Foundation, Germany
- 2016 Member of the International Mathematical Union (IMU) Circle
- 2015 Special Contribution Award, Korean Mathematical Society
- 2008 Heisenberg Fellowship of German Research Foundation

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## Research grants

- 2018–2021 Austrian-German DACH-project “Random graphs: cores, colourings and contagion”
- 2015–2023 Subproject 15. “Random graphs on a surface” within FWF Doctoral Program “Discrete Mathematics” (Phases II and III)
- 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”

## Editorial activities

- 2020– Editorial board member of *Random Structures & Algorithms*
- 2019– Editorial board member of *Annals of Combinatorics*
- 2018– Series editor of *Mathematik Kompakt* – Springer
- 2018–2019 Guest editor of *European Journal on Combinatorics*
- 2017 Guest editor of *Electronic Notes in Discrete Mathematics*
- 2013– Editor of *Online Journal of Analytic Combinatorics*
- 2012– Chief editor of *Discrete Mathematics & Theoretical Computer Science*
- 2011–2016 Associate editor of *SIAM Journal on Discrete Mathematics*

## Academic duties

- 2020– Deputy head of the Institute of Discrete Mathematics, TU Graz (deputy head 2016–2017; head 2018–2019)
- 2016–2019 Deputy head of the Fields of Expertise “Information, Communication & Computing”, TU Graz
- 2016– NAWI-Graz Working Group “Fundamental and Applied Mathematics”, TU Graz
- 2014– Executive committee member of the Discrete Mathematics Group of the German Mathematical Society (speaker: 2016–2018)
- 2013– Member of the Senate, TU Graz
- 2012–2015 Head of the Institute of Optimization and Discrete Mathematics, TU Graz

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## Committee for international conferences

- Program committee:
  - SODA 2020/2009
  - ANALCO 2019/2017
  - AofA 2020/2016/2014
- Organising committee/co-organiser:
  - Banff Workshop on Random Graphs and Statistical Inference 2021
  - Oberwolfach Workshop on Random Graphs 2020
  - Symposium Diskrete Mathematik 2018
  - European Conference on Combinatorics, Graph Theory and Applications 2017
  - International Congress of Mathematicians 2014

## Selected plenary/keynote/invited talks

- Invited talk, Rényi Centennial, Section on Random Graphs and Networks 2, Budapest, Hungary, June 2021
- Invited talk, 46th International Workshop on Graph-Theoretic Concepts in Computer Science, Leeds, UK, June 2020
- 3 Plenary lectures “Introduction to random graphs”, Combinatorics Workshop 2019, Incheon, Korea, August 2019
- Invited talk “Topological aspects of random graphs”, Clay Mathematics Institute Workshop on Recent Advances in Extremal Combinatorics, University of Oxford, UK, December 2018
- Keynote lecture “Vanishing of cohomology groups of random simplicial complexes”, 29th Conference on Analysis of Algorithms, Uppsala, Sweden, June 2018
- 2 Introductory lectures “Enumeration of graphs on surfaces”, Workshop on Enumerative Combinatorics, Erwin Schrödinger Institute, Vienna, Austria, October 2017
- Plenary lecture “Homological connectivity of random hypergraphs”, STAR Workshop on Random Graphs, Utrecht, The Netherlands, January 2017
- Keynote lecture “Asymptotic properties of graphs on orientable surfaces”, 27th Conference on Formal Power Series and Algebraic Combinatorics, KAIST, Korea, July 2015
- Invited talk “Recent developments in phase transitions and critical phenomena”, Erdős Centennial, Section on Random Discrete Structures, Budapest, Hungary, July 2013
- Keynote lecture “Phase transitions in random discrete structures”, 24th Conference on Analysis of Algorithms, Menorca, Spain, May 2013
- Distinguished Lecture “Combinatorial structures and algorithms”, Workshop on Randomness and Enumeration, Curacautín, Chile, November 2008

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## Selected publications

- M. Kang, M. Moßhammer, and P. Sprüssel, Phase transitions in graphs on orientable surfaces, *Random Structures & Algorithms* (2019), 1–54.
- 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.
- A. Coja-Oghlan, O. Cooley, M. Kang, and K. Skubch, How does the core sit inside the mantle?, *Random Structures & Algorithms* 51 (2017), 459–482.
- B. Bollobás, O. Cooley, M. Kang, and C. Koch, Jigsaw percolation on random hypergraphs, *Journal of Applied Probability* 54 (2017), 1261–1277.
- M. Behrisch, A. Coja-Oghlan, and M. Kang, The asymptotic number of connected  $d$ -uniform hypergraphs, *Combinatorics, Probability and Computing* 23 (2014), 367–385.
- 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. Loeb, The enumeration of planar graphs via Wick’s theorem, *Advances in Mathematics* 221 (2009), 1703–1724.
- M. Kang and T. G. 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.
- M. Bodirsky, C. Gröpl, and M. Kang, Generating labeled planar graphs uniformly at random, *Theoretical Computer Science* 379 (2007), 377–386.