

Annika Heckel

Curriculum Vitae

Mathematical Institute
Uppsala University
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Employment

- Since 02/2022 **Assistant Professor (tenure track)**, *Mathematical Institute*, Uppsala University, Sweden.
- Spring 2025 **Research member**, *SLMath (MSRI)*, Berkeley, USA.
Upcoming 4 month research membership in the semester programme 'Extremal Combinatorics'
- 2019 – 2022 **Postdoctoral Research Assistant**, *Department of Mathematics*, Ludwig-Maximilians-Universität München, Germany.
Working with Prof. Konstantinos Panagiotou on the ERC project 'Phase Transitions in Random Constraint Satisfaction Problems'.
- 2016 – 2019 **Postdoctoral Research Assistant**, *Mathematical Institute*, University of Oxford, UK.
Working with Prof. David Conlon on the ERC project 'Randomness and pseudorandomness in discrete mathematics'.

Education

- 2011 – 2017 **DPhil in Mathematics**, *Balliol College, University of Oxford*.
Supervisor: Prof. Oliver Riordan, Thesis: *Colourings of Random Graphs*
- 2005 – 2011 **Diplom (MSc equivalent) in Mathematics**, *LMU Munich*, Germany.
Minor: Computer Science. *Passed with distinction, Grade 1.0*
- 2008 – 2009 **Visiting Student in Mathematics**, *Balliol College, University of Oxford*.

Parental leave

- 2023 – 2024 12 months parental leave, October 2023 – September 2024
- 2013 – 2014 12 months parental leave, October 2013 – September 2014

Research funding

- 2023-2026 Starting Grant from the Swedish Research Council, 'Concentration versus spread — tools, lower bounds and applications', reg. nr. 2022-02829. 4,000,000 SEK (roughly €350,000)
- 2020 Robert Bartnik Visiting Fellowship, Monash University, Melbourne, 15,494 AUD (roughly €9,400). Funding for a six week research stay to work with Nicholas Wormald. Planned for 2020, cancelled due to pandemic travel restrictions.
- 2016 London Mathematical Society Postdoctoral Mobility Grant, visiting fellowship at LMU Munich, £7,800 (roughly €9,200)(declined in favour of postdoc position)

Awards

- 2024 Frontiers of Science Award in Mathematics, *International Congress of Basic Science*
- 2004 Bronze medal, *International Mathematical Olympiad*

Scholarships

- 2016 Vice Chancellors' Fund Award, University of Oxford
- 2015 – 2016 Mathematical Prizes Fund, Mathematical Institute, University of Oxford
- 2011 – 2015 Scatcherd European Scholarship, University of Oxford
- 2011 – 2015 EPSRC Studentship
- 2005 – 2011 Maximilianeum Foundation Scholarship (6–8 students selected each year amongst all Bavarian school leavers)
- 2005 – 2011 German National Academic Foundation Undergraduate Scholarship
- 2005 – 2011 Max Weber Scholarship under the Bavarian Elite Support Act BayEFG
- 2008 – 2009 German National Academic Foundation Scholarship for study abroad

Invited conference talks

- 2024 Clay Mathematics Institute Workshop 'New Frontiers in Probabilistic and Extremal Combinatorics', upcoming
- 2024 Frontiers of Science Award lecture, International Congress of Basic Science, Beijing.
- 2023 Random Structures & Algorithms 2023, plenary speaker. CMU, Pittsburgh.
- 2023 London Combinatorics Colloquia, LSE & QMUL, London
- 2022 Oberwolfach Workshop "Combinatorics, Probability and Computing".
- 2022 Rényi-100, Budapest.
- 2021 8th European Congress of Mathematics, Minisymposium "Extremal & Probabilistic Combinatorics", online.
- 2021 CanaDAM, Minisymposium "Probabilistic approaches", online.
- 2020 Oberwolfach Workshop "Combinatorics".
- 2020 Simons Institute Workshop "Concentration of Measure Phenomena", online.
- 2020 DMV Minisymposium "Extremal and Probabilistic Combinatorics", online.
- 2019 Oberwolfach Workshop "Combinatorics, Probability and Computing".
- 2018 Clay Mathematics Institute workshop "Recent Advances in Extremal Combinatorics", Oxford.
- 2018 ICM 2018 Satellite Meeting "Combinatorics: extremal, probabilistic and additive", São Paulo.
- 2018 Young Mathematicians' Colloquium, plenary speaker, Birmingham.
- 2018 Workshop on Random Graphs and Processes, King's College London.
- 2016 Workshop 'Large-scale structures in random graphs', Alan Turing Institute, London.

Seminar Talks

- 2023 Probability and Combinatorics Seminar, Uppsala.
- 2022 Probability and Combinatorics Seminar, Uppsala.
- 2021 Oberseminar Mathematische Stochastik, Universität Münster, online.
- 2021 LSE Combinatorics Seminar, Round the World Relay in Combinatorics, online.
- 2021 Probability and Combinatorics Seminar, Uppsala.
- 2021 BYO Workshop in Probability and Finance, LMU Munich
- 2020 Research Seminar in Combinatorics, Tel Aviv University, online.

- 2020 Combinatorics and Optimization Seminar, TU Graz, online.
- 2020 Seminar of the Combinatorial Mathematics Society of Australasia, online.
- 2020 Webinar “Extremal and Probabilistic Combinatorics”. Link to recording.
- 2019 Probability Seminar, Princeton University.
- 2019 Discrete Mathematics Seminar, Rutgers University.
- 2019 Combinatorial Theory Seminar, University of Oxford
- 2019 Combinatorics Seminar, University of Birmingham.
- 2018 DIMAP Seminar, University of Warwick.
- 2018 Probability seminar, University of Bath.
- 2018 Mathematical Sciences Seminar, Birkbeck, University of London.
- 2016 Combinatorial Theory Seminar, University of Oxford.
- 2016 Seminar on Combinatorics, Games and Optimisation, LSE.
- 2016 Mittagseminar, ETH Zürich.
- 2016 Combinatorics Seminar, University of Cambridge.
- 2016 Combinatorics Seminar, University of Bristol.
- 2016 Combinatorics Seminar, University of Birmingham.
- 2012 Combinatorial Theory Seminar, University of Oxford.

Contributed talks at conferences and workshops

- 2023 Probabilistic Midwinter Meeting, Umeå.
- 2022 Random Structures and Algorithms, Poznan.
- 2019 Random Structures and Algorithms, ETH Zürich.
- 2017 Random Structures and Algorithms, Poznan.
- 2016 Austrian Stochastics Days, TU Graz.
- 2016 ALEA in Europe Meeting, Munich.
- 2013 Young Women in Discrete Mathematics, Bonn.
- 2012 Postgraduate Combinatorial Conference, Warwick.
- 2011 Memphis-Budapest Summer School in Combinatorics, Budapest.

Teaching Experience

Uppsala University

- Autumn 24 Upcoming courses: Graph theory (lecturer), PhD course Probabilistic Combinatorics (co-lecturer)
- Spring 23 IMS321 Probability and Statistics for Computer Science (lecturer)
- Autumn 22 IMS005 Probability and Statistics (lecturer)
- Spring 22 IMS321 Probability and Statistics for Computer Science (lecturer)

LMU Munich

- 20/21 Co-lectured *Introduction to Probability* (Einführung in die Stochastik)
- 06/07 Tutor for *Analysis I*

Wadham College, University of Oxford

- 2018 College tutor for *Integration*

- 2017 College tutor for *Analysis II* and *Integration*
[Mathematical Institute, University of Oxford](#)
- 2013 TA for *Graph Theory*
- 2012 Class tutor for *Martingales through Measure Theory* and TA for *Probabilistic Combinatorics*
- 2011 TA for *Martingales through Measure Theory*

List of publications

In preparation:

Colouring random graphs: The distribution of the chromatic number (with K. Panagiotou), *manuscript in preparation*, 2024+.

On a question of Erdős and Gimbel on the cochromatic number. 4 pages, *manuscript will appear on arXiv within the next few days*.

Preprints:

Colouring random graphs: Tame colourings (with K. Panagiotou), 2023. Preprint available at <https://arxiv.org/abs/2306.07253>.

Journal papers:

- [9] The hitting time of clique factors (with M. Kaufmann, N. Müller, M. Pasch), *Random Structures and Algorithms* 65(2), 275–312, 2024.
- [8] How does the chromatic number of a random graph vary? (with O. Riordan), *Journal of the London Mathematical Society* 108(5), 1769–1815, 2023.
- [7] Random triangles in random graphs. *Random Structures and Algorithms* 59(4), 616–621, 2021.
- [6] Non-concentration of the chromatic number of a random graph. *Journal of the American Mathematical Society* 34, 245–260, 2021.
- [5] Sharp concentration of the equitable chromatic number of dense random graphs. *Combinatorics, Probability and Computing* 29(2), 213–233, 2020.
- [4] The chromatic number of dense random graphs. *Random Structures and Algorithms* 53(1), 140–182, 2018.
- [3] On the threshold for rainbow connection number r in random graphs (with O. Riordan), *Graphs and Combinatorics* 32(1), 161–174, 2016.
- [2] Mathematical foundations of and empirical investigations into the dynamic of top positions: Stabilization Effect, Reversed Matthew Effect, and Heraclitus Effect (with A. Ziegler and A. Ziegler), *Psychological Test and Assessment Modeling* 55(4), 401–414, 2013.
- [1] The Hitting Time of Rainbow Connection Number Two (with O. Riordan), *The Electronic Journal of Combinatorics* 19, P37, 1–14, 2012.

Conference papers:

On the concentration and non-concentration of the chromatic number of a random graph. *To appear in 'Proceedings of the International Congress of Basic Science 2024'*.

The hitting time of clique factors (with M. Kaufmann, N. Müller and M. Pasch). *Proceedings of the 12th European Conference on Combinatorics, Graph Theory and Applications EUROCOMB'23*, 552–560, 2023.

Oberwolfach reports:

Cliques in the random graph process and the hitting time of clique factors (with M. Kaufmann, N. Müller, M. Pasch). Oberwolfach Workshop 2217 'Combinatorics, Probability and Computing', 14–16, 2022.

Non-concentration of the chromatic number (with O. Riordan). Oberwolfach Workshop 2002 "Combinatorics", 26–29, 2020.

Non-concentration of $\chi(G_{n, \frac{1}{2}})$. Oberwolfach Workshop 1916 "Combinatorics, Probability and Computing", 1141–1144, 2019.