

Michael Anastos

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Institute of Science and Technology Austria,
Am Campus 1, 3400 Klosterneuburg

RESEARCH INTERESTS

Random graphs, probabilistic and extremal combinatorics, Markov chains, inference on graphs and randomized algorithms.

EMPLOYMENT AND EDUCATION

- **Postdoctoral Researcher - Marie Skłodowska-Curie fellow** Klosterneuburg, Austria
Institute of Sciences and Technology May 2022–
- **Postdoctoral Researcher** Berlin, Germany
Freie Universität Berlin September 2019–May 2022
- **Doctor of Philosophy in Algorithms, Combinatorics and Optimization** Pittsburgh, USA
Carnegie Mellon University August 2014–May 2019
- **Master of Science in Machine Learning** Pittsburgh, USA
Carnegie Mellon University August 2018–May 2019
- **Master of Advance Studies in Mathematics,** Cambridge, UK
University Of Cambridge October 2013–May 2014
- **Bachelor of Science in Mathematics (1st Class Honors),** Bristol, UK
University Of Bristol October 2010–May 2013
– Received **Henry Ronald Hasse Prize**, awarded to best final year student

AWARDS AND SCHOLARSHIPS

IST-BRIDGE postdoctoral fellowship, (Institute of Science and Technology Austria)	2022
Henry Ronald Hasse Prize (Department of Mathematics, Bristol University)	2013
Faculty of Science of Bristol undergraduate prize (Department of Mathematics, Bristol University)	2012
Nuffield Foundation Undergraduate Research Bursary	2012
Undergraduate Scholarship – awarded from the Cyprus State Scholarship Foundation	2010-2013

ACADEMIC POSITIONS

- **Freie Universität Berlin (2019-2022) Instructor-** Random Graphs, Algorithmic Combinatorics **Teaching Assistant-** Extremal Combinatorics, Discrete Math I
- **Carnegie Mellon University (2014-2019) Teaching Assistant-** Integration and Approximation(21-122), Matrices and Linear Transformations(21-241). **Grader-** Random Graphs (21-366), Operational Research II(21-293), Graph Theory (21-484), Combinatorial Games (21-366), Methods of Optimization (21-690)

POSITIONS OF RESPONSIBILITY

- **Seminar Co-organiser**, Institute of Science and Technology Austria.
- **Student representative**, University of Bristol (2012-2013).
- **Military service** (2008-2010). I served a 24 - month military service at the Cypriot National Guard (Obligatory). **I held the rank of cadet officer** which I received after being selected and trained. As a cadet officer I was responsible for the daily training and supervision of 30 soldiers.

PUBLICATIONS

1. M. Anastos, D. Fabian, A. Műyesser and T. Szabó. “Splitting Matchings and the Ryser-Brualdi-Stein Conjecture for Multisets.” *The Electronic Journal of Combinatorics* (2023): P3-10.
2. M. Anastos. “A Note on Long Cycles in Sparse Random Graphs.” *The Electronic Journal of Combinatorics* (2023): P2-21.
3. M. Anastos and A. Frieze. “A scaling limit for the length of the longest cycle in a sparse random digraph.” *Random Structures & Algorithms* 60.1: 3-24 (2022).
4. M. Anastos, A. Frieze and P. Gao “Hamiltonicity of random graphs in the stochastic block model.” *SIAM Journal on Discrete Mathematics* 35.3: 1854-1880 (2021).
5. M. Anastos, A. Lamaison, R. Steiner and T. Szabó “Majority Colorings of Sparse Digraphs.” *Electron. J. Comb.* 28(2) (2021).
6. M. Anastos and A. Frieze, “Finding perfect matchings in random regular graphs in linear time.” *Random Struct. Algorithms* 58(3): 390-429 (2021).
7. M. Anastos, A. Frieze: “A scaling limit for the length of the longest cycle in a sparse random graph.” *J. Comb. Theory, Ser. B* 148: 184-208 (2021).
8. M. Anastos, D. Bal: “A Ramsey property of random regular and k -out graphs.” *J. Graph Theory* 93(3): 363-371 (2020).
9. M. Anastos and A. Frieze, “Hamilton cycles in random graphs with minimum degree at least 3: An improved analysis”, *Random Struct. Algorithms* 57(4): 865-878 (2020).
10. M. Anastos and A. Frieze, “On the connectivity threshold for colorings of random graphs and hypergraphs.” *Random Struct. Algorithms* 56(4): 988–997 (2020).
11. M. Anastos and A. Frieze, “How many randomly colored edges make a randomly colored dense graph rainbow Hamiltonian or rainbow connected?” *J. Graph Theory* 92(4): 405-414 (2019).
12. M. Anastos and A. Frieze, “Pattern Colored Hamilton Cycles in Random Graphs”. *SIAM J. Discret. Math.* 33(1): 528-545 (2019).
13. M. Anastos, A. Frieze and W. Pegden, “Constraining the clustering transition for colorings of sparse random graphs”. *Electron. J. Comb.* 25(1): P1.72 (2018).
14. M. Anastos, “Connectivity of the k -out Hypercube”. *SIAM J. Discret. Math.* 32(3): 2194-2216 (2018).
15. M. Anastos and J. Briggs, “Packing Directed and Hamilton Cycles Online”. *SIAM J. Discret. Math.* 32(2): 1505-1539 (2018).
16. M. Anastos and A. Frieze, “Randomly coloring simple hypergraphs with fewer colors”. *Information Processing Letters, Inf. Process. Lett.* 126: 39-42 (2017).

CONFERENCE PROCEEDINGS

1. M. Anastos. “Fast algorithms for solving the Hamilton Cycle problem with high probability.” *Proceedings of the 2023 Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*.
2. M. Anastos. “Constructing Hamilton cycles and perfect matchings efficiently.” In *proceedings of European Conference on Combinatorics, Graph Theory and Applications* (2023) (EUROCOMB).

3. M. Anastos, “Solving the Hamilton Cycle problem fast on average”, 2022 IEEE 63rd Annual Symposium on Foundations of Computer Science (FOCS). IEEE, 2022.
4. M. Anastos, P. Michaeli and S. Petti “Thresholds in Random Motif Graphs”, Proceedings of APPROX-RANDOM. 2019.
5. M. Anastos and A. Frieze, “On the connectivity threshold for colorings of random graphs and hypergraphs”, Proceedings of APPROX-RANDOM. 2019.

MANUSCRIPTS

1. M. Anastos, Z. Jin, M. Kwan and B. Sudakov. “Extremal, enumerative and probabilistic results on ordered hypergraph matchings”, preprint available as arXiv:2308.12268.
2. M. Anastos, O. Cooley, M. Kang and M. Kwan. “Partitioning problems via random processes”, preprint available as arXiv:2307.06453.
3. Y. Alon and M. Anastos. “The completion numbers of Hamiltonicity and pancyclicity in random graphs”, preprint available as arXiv:2304.03710.
4. M. Anastos. “An improved lower bound on the length of the longest cycle in random graphs”, preprint available as arXiv:2208.06851.
5. M. Anastos, “Packing Hamilton Cycles in Cores of Random Graphs”, preprint available as arXiv:2107.03527.
6. M. Anastos, “On a k -matching algorithm and finding k -factors in random graphs with minimum degree $k+1$ in linear time”, preprint available as arXiv:2107.03523.
7. M. Anastos, “Purchasing a C_4 online”, preprint available as arXiv:1611.07503.

TALKS

Invited conferences/workshops

1. “A Fast Algorithm on Average for Solving the Hamilton Cycle Problem”, IGAFIT, Highlights of Algorithms, Prague, August 2023
2. Workshop on Random Graphs, Mathematisches Forschungsinstitut Oberwolfach. March 2023.
3. “Longest cycles in sparse random graphs and where to find them”, Young Researchers in Extremal and Probabilistic Combinatorics, IBS, South Korean (online), October 2021.
4. “On a k -matching algorithm and finding k -factors in random graphs with minimum degree $k+1$ in linear time”, AMS Sectional Meeting, Chattanooga (online), October 2020.
5. “On a connectivity threshold for colorings of random graphs and hypergraphs”, GRAAL Summer school, Marseille, June 2019.
6. Finding perfect matchings in random regular graphs in linear expected time, AMS Sectional Meeting, Auburn, March 2019.
7. Coloring directed Hamilton cycles online, AMS Sectional Meeting, Bloomington, April 2017.

Contributed conference talks

1. “Constructing Hamilton cycles and perfect matchings efficiently”, European Conference on Combinatorics, Graph Theory and Applications (EUROCOMB), Prague, August 2023.

2. “Constructing Hamilton cycles efficiently”, Random Structures and Algorithms, Pittsburgh, June 2023.
3. “Fast algorithms for solving the Hamilton Cycle problem with high probability”, Annual ACM-SIAM Symposium on Discrete Algorithms (SODA), Florence, February 2023.
4. “Solving the Hamilton Cycle problem fast on average”, 2022 IEEE 63rd Annual Symposium on Foundations of Computer Science (FOCS), Denver, October 2022.
5. “An improved lower bound on the length of the longest cycle in random graphs”, Random Structures and Algorithms, Poznan, August 2022.
6. “On a connectivity threshold for colorings of random graphs and hypergraphs”, Random 2019, Boston, September 2019.
7. “Finding perfect matchings in random regular graphs in linear expected time”, 27th British Combinatorial Conference, Birmingham, August 2019.
8. “Hamilton cycles in random graphs with minimum degree at least 3”, Random Structures and Algorithms, Zurich, July 2019.

Departmental seminars/colloquia

1. “Longest cycles in sparse random graphs and where to find them”, ISTA Theory Computer Science Seminar, July 2023.
2. “On a random rainbow version of Dirac’s theorem”, Combinatorics Days at TAU, July 2023.
3. “Longest cycles in sparse random graphs and where to find them”, Graz Combinatorics Seminar, June 2022.
4. “On a k -matching algorithm and finding k -factors in cores of random graphs”, Freie Universität Berlin, March 2021.
5. “Sampling Colorings of Hypergraphs”, Freie Universität Berlin, September 2020.
6. “Packing Hamilton Cycles in Cores of Random Graphs”, Tel Aviv University, March 2020.
7. “The longest path in a random graph has a scaling limit”, Freie Universität Berlin, October 2019.
8. “Finding perfect matchings in random regular graphs in linear time”, Boston University, September 2019.
9. “Perfect matchings in random k regular graphs and how to find them”, University of Waterloo, May 2019.
10. “Coloring (random) hypergraphs”, Carnegie Mellon University, Pittsburgh, January 2019.