

Alexandra Wesolek – CV

Technische Universitaet Berlin
Berlin Mathematical School

<http://www.sfu.ca/~agwesole/>
alexandrawesolek@gmail.com

Research Interests

Topological Graph Theory, Structural Graph Theory, Graph Algorithms.

Education and Research Work

Dirichlet Postdoctoral Fellow Technische Universitaet Berlin, Berlin Mathematical School (Berlin, Germany)	Oct 2023 - present
Guest Lecturer Freie Universitaet Berlin (Berlin, Germany)	Aug 2023
Postdoctoral Researcher Laboratoire LIRIS (Lyon, France)	May - Jul 2023
PhD in Mathematics (Graphs on Surfaces, supervised by Bojan Mohar, Matthew DeVos) Simon Fraser University (Vancouver, Canada)	May 2019 – Apr 2023
Research Assistant (Supervised by Bojan Mohar) Simon Fraser University (Vancouver, Canada)	Jan – Apr 2019
BSc and MSc in Mathematics (MSc supervised by Tibor Szabó, Shagnik Das) Freie Universitaet Berlin (Berlin, Germany) Includes three semesters of international exchange studies at: ETH Zurich (Zurich, Switzerland) and Australian National University (Canberra, Australia)	Oct 2012 – Dec 2018

Awards & Honors

Vanier Canada Graduate Scholarship Funded by Canada's federal granting institution NSERC	May 2020 – Apr 2023
PROMOS Scholarship for international exchange studies DAAD funded by German Federal Ministry of Education and Research	Sep 2017 – Feb 2018 and Aug 2014 – Jan 2015
Bachelor Prize - Honor Berlin Mathematical Society BMG	Nov 2016

Publications

Preprints

1. A. Espuny Diaz, L. Lichev, D. Mitsche, A. Wesolek - Sharp threshold for embedding balanced spanning trees in random geometric graphs
arXiv: [2303.14229](https://arxiv.org/abs/2303.14229)
2. N. Bousquet, T. Pierron, A. Wesolek - A note on highly connected $K_{2,\ell}$ -minor free graphs
arXiv: [2301.02133](https://arxiv.org/abs/2301.02133)
3. A. Wesolek - Bootstrap percolation in Ore-type graphs
arXiv: [1909.04649](https://arxiv.org/abs/1909.04649)
4. S. Cabello, É. Czabarka, R. Fabila-Monroy, Y. Higashikawa, R. Seidel, L. Székely, J. Tkadlec, A. Wesolek - A Note on the 2-Colored Rectilinear Crossing Number of Random Point Sets in the Unit Square
arXiv: [2312.01935](https://arxiv.org/abs/2312.01935)
5. V. Iršič, B. Mohar, A. Wesolek - Cops and Robber on Hyperbolic Manifolds
arXiv: [2402.05753](https://arxiv.org/abs/2402.05753)

Published

1. N. Bousquet, L. De Meyer, T. Pierron, A. Wesolek - Reconfiguration of plane trees in convex geometric graphs
Accepted to SOCG 2024, arXiv: [2310.18518](https://arxiv.org/abs/2310.18518)
2. M. DeVos, D. Rogers, A. Wesolek - On Minimizing the Energy of a Spherical Graph Representation
International Symposium on Graph Drawing and Network Visualization (GD 2023),
doi: [10.48550/arXiv.2309.02817](https://doi.org/10.48550/arXiv.2309.02817)
3. É. Bonnet, J. Duron, C. Geniet, S. Thomassé, A. Wesolek - Maximum Independent Set when excluding an induced minor: $K_1 + tK_2$ and $tC_3 \uplus C_4$
European Symposium on Algorithms (ESA 2023), doi: [10.4230/LIPIcs.ESA.2023.23](https://doi.org/10.4230/LIPIcs.ESA.2023.23)
4. N. Morrison, JD Nir, S. Norin, Paweł Rzażewski, A. Wesolek - Every graph is eventually Turán-good
Journal of Combinatorial Theory, Series B, doi: [10.1016/j.jctb.2023.06.004](https://doi.org/10.1016/j.jctb.2023.06.004)
5. M. Bonamy, É. Bonnet, H. Déprés, L. Esperet, C. Geniet, C. Hilaire, S. Thomassé, A. Wesolek - Sparse graphs with bounded induced cycle packing number have logarithmic treewidth
Accepted to Journal of Combinatorial Theory, Series B
Symposium on Discrete Algorithms (SODA 2023), doi: [10.1137/1.9781611977554.ch116](https://doi.org/10.1137/1.9781611977554.ch116)
6. V. Iršič, B. Mohar, A. Wesolek - Cops and Robber game in higher-dimensional manifolds with spherical and Euclidean metric
CR Math. Rep. Acad. Sci. Canada 2022, doi: [arXiv.2211.02290](https://arxiv.org/abs/2211.02290)
7. D. W. Cranston, J. Nie, J. Verstraëte, A. Wesolek - On Asymptotic Packing of Geometric Graphs
Discrete Applied Mathematics 2022, doi: [10.1016/j.dam.2022.07.030](https://doi.org/10.1016/j.dam.2022.07.030)
8. M. Bonamy, L. Cook, C. Groenland, A. Wesolek - A Tight Local Algorithm for the Minimum Dominating Set Problem in Outerplanar Graphs
35th International Symposium on Distributed Computing (DISC 2021), doi: [10.4230/LIPIcs.DISC.2021.13](https://doi.org/10.4230/LIPIcs.DISC.2021.13)
9. M. Bonamy, C. Groenland, C. Muller, J. Narboni, J. Pekárek, A. Wesolek - A note on connected greedy edge colouring
Discrete Applied Mathematics 2021, doi: [10.1016/j.dam.2021.07.018](https://doi.org/10.1016/j.dam.2021.07.018)
10. M. Bonamy, B. Mohar and A. Wesolek - Limiting crossing numbers for geodesic drawings on the sphere
International Symposium on Graph Drawing and Network Visualization (GD 2020),
doi: [10.1007/978-3-030-68766-3_27](https://doi.org/10.1007/978-3-030-68766-3_27)

Invited Talks

Extremal graphs in the generalized Turán problem Barcelona Mathematical Days 2023	Nov 2023
Cops and Robber on Surfaces of Constant Curvature Combinatorics Seminar FUB, Mittagsemnar TUB, Algorithms Seminar Utrecht, Graphes et Opt. LaBRI, GAPCOMB Barcelona and UVic Discrete Math Seminar	Nov 2023 - Nov 2022
A Tight Local Algorithm for the MDS Problem in Outerplanar Graphs LIRIS-LIP Graph Theory Seminar and Algorithms Seminar Utrecht	Sep 2021-Aug 2022
On Asymptotic Packing of Geometric Graphs Graphes et Opt. LaBRI	May - Jun 2022
Limiting Crossing Numbers for Geodesic Drawings on the Sphere Graphes et Opt. LaBRI	Sep 2020 - Sep 2021
Graph Drawings and Graph Limits Copenhagen-Jerusalem Combinatorics Seminar and UVic Discrete Math Seminar	Nov 2020 - Sep 2021
Student Project: Women Speaker Series CMS Equity Forum at the Summer Meeting	Jun 2021
Panel: Voices of Diversity CMS COVID-19 Research and Education Meeting	Jul 2020
On Minimizing the Energy of a Graph Representation Graphes et Opt. LaBRI	Jan 2020

Weak rainbow saturation Combinatorics Seminar FUB	Aug 2019
Bootstrap percolation in Ore-type graphs Combinatorics Seminar FUB	Dec 2018

Contributed Talks

Cops and Robber on Surfaces of Constant Curvature Eurocomb 2023	Aug 2023
On Minimizing the Energy of a Spherical Graph Representation Graph Drawing 2023	Sep 2023
On Asymptotic Packing of Geometric Graphs SoCG 2022	Jun 2022
A Tight Local Algorithm for the MDS Problem in Outerplanar Graphs DISC 2021	Sep 2021
Limiting crossing numbers for geodesic drawings on the sphere Graph Drawing 2020	Sep 2020
Bootstrap percolation in Ore-type graphs CanadAM 2019	May 2019

Student Supervision

Master student Timothé Picavet, Distributed Algorithms in the LOCAL model (joint with Marthe Bonamy)	2022
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Teaching

Lecturer, Technische Universitaet Berlin (TUB) and Freie Universitaet Berlin (FUB) Logic and Discrete Mathematics for Computer Scientists (FUB)	Upcoming Summer 2024
Linear Algebra (TUB, 5 lectures)	Fall 2023
Graph Theory 2 (TUB, 7 lectures)	Fall 2023
Logic and Discrete Mathematics for Computer Scientists (FUB)	Summer 2023
Teaching Project, Freie Universitaet Berlin	Fall 2018
<ul style="list-style-type: none"> Organized and lead a new learning project for first year students. The project was a prototype of the Lernzentrum currently running at FUB. 	
Teaching Assistant, Technische Universitaet Berlin (TUB), Simon Fraser University (SFU), Freie Universitaet Berlin (FUB) and Australian National University (ANU) Graph Theory 2 (TUB)	Fall 2019
Introduction to Graph Theory (SFU)	Fall 2019
Numerical Analysis I (SFU)	Summer 2019
Preparatory Course in Mathematics (FUB)	Fall 2018
Mathematics for Computer Scientists: Calculus and Linear Algebra (FUB)	Summer 2018
Discover Mathematics II: Algebra and Geometry (FUB)	Spring 2018
Analysis I and II (FUB)	Fall 2016 and Spring 2017
Mathematics for primary school teachers: Mathematics Education, Algebra (FUB)	Spring 2016
Mathematics and Applications II: Calculus and Linear Algebra (ANU)	Spring 2015

Event Administration

Organizer, Workshop: Early Career Researchers in Combinatorics 2024 Website: https://www.icms.org.uk/ECRiC24	Jul 2024
Local Organizer, Event: Round the World Relay in Combinatorics (Global Organizer: Alex Scott) Recordings: Fan Chung (UCSD) , Trees and forests in Green's functions of a graph	Jun 2021
Organizer, Women in Discrete Mathematics Speaker Series, Online Seminar Recordings: SFU DM Seminar - Channel on YouTube	Sep 2020 – Dec 2020
Organizer, Event: TA's Teaching During COVID-19 An online discussion with Dr. Andie Burazin (UTM)	Jul 2020
Assistant, EuroCG 2018, Conference Freie Universitaet Berlin	Mar 2018

Research Visits

Carla Groenland, Utrecht University, Netherlands	Jun 2023
Nicolas Bousquet, LIRIS Lyon, France	Aug 2022
Édouard Bonnet and Stéphan Thomassé, LIP Lyon, France	Aug 2022
Marthe Bonamy, LaBRI Bordeaux, France	Jan 2020, Mar 2022 – Jun 2022, Dec 2022 - Mar 2023

Research Visitors

Timothé Picavet	Jan 2024
Vesna Iršič	Nov 2023

Invited Workshops

Banff Workshop on New Perspectives in Colouring and Structure	Sep 2024
Crossing Number Workshop	Jul 2024
Banff Workshop on Bootstrap Percolation and its Applications	Apr 2024
Barbados Structural Graph Theory Workshop	Mar and Dec 2022, Mar 2024
Banff Probabilistic and Analytic Combinatorics Workshop	Nov 2022
ICMS Young Researchers in Combinatorics Workshop	Jul 2022
Crossing Number Workshop	Jul 2022
Banff Cross-Community Collaborations in Combinatorics Workshop	May 2022
Graduate Research Workshop in Combinatorics	Jun 2021

Selected Community Work

Committee Member, Senate Appeals Board SFU	Oct 2019 – May 2022
<ul style="list-style-type: none">The Senate Appeals Board hears appeals from students on matters involving the application of academic policies and requirements relating to but not limited to: Withdrawal Under Extenuating Circumstances and Special Circumstances for Admission/Readmission.	
Mentor for Mathematics Students	
Freie Universitaet Berlin, Mentoring program	Sep – Dec 2018
Australian National University, Canberra, SET4ANU program	Jan – Feb 2015
<ul style="list-style-type: none">Attended workshops on teaching and mentoring.Organized meetings with students and mentored through email correspondence.	

Selected Solidarity Work

Organizer with the Solidarity and Social Justice Committee, Teaching Support Staff Union	Apr 2021 – May 2022
Solidarity and Social Justice Commissioner (Chair)	
<ul style="list-style-type: none">Chaired monthly meetings of the committee and organized project meetings (\approx 3 meetings per month).Organized events like a climate strike, an Inclusive Language Workshop, an Equitable Mindfulness Workshop and a film screening of “Biidaaban” and “Brazil’s Warrior Women”.	
Local Organizer with Amnesty International	Jul 2019 – Jun 2020
Student Group Chair, Simon Fraser University	
<ul style="list-style-type: none">Chaired meetings twice a month.Organized local events like the annual global letter writing event “Write4Rights”, a film screening of “I am the revolution” and a presentation on women’s rights defender Loujain al-Hathloul. We also created a short clip for an informative video on the TMX pipeline.	