ANNA PARLAK

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https://annaparlak.github.io

EMPLOYMENT

Max Planck Institute for Mathematics in the Sciences, Germany *July 2025 - now*
Researcher

University of California Davis, United States *July 2022 - June 2025*
Krener Assistant Professor

University of Oxford, United Kingdom *May 2021 - July 2022*
Postdoctoral Research Associate in Pure Mathematics

EDUCATION

University of Warwick, United Kingdom *October 2017 - August 2021*
Mathematics, PhD ▶ Advisor: Saul Schleimer
Thesis: *Veering triangulations and polynomial invariants of three-manifolds*

University of Gdańsk, Poland *October 2015 - July 2017*
Mathematics, MSc ▶ Advisor: Michał Stukow
Thesis: *Roots in the mapping class group of a nonorientable surface*

University of Gdańsk, Poland *October 2012 - July 2015*
Mathematics, BSc ▶ Advisor: Witold Rosicki
Thesis: *Relations between knots and planar graphs: Tait's constructions, Fox colourings and quandles*

University of Gdańsk & Medical University of Gdańsk, Poland *October 2010 - July 2013*
Biotechnology, BSc ▶ Advisor: Stanisław Ołdziej
Final project: *Phosphorylation–induced conformational changes of tau protein*

RESEARCH INTERESTS

low-dimensional topology • dynamics on 3-manifolds • polynomial invariants of 3-manifolds • pseudo-Anosov flows • veering triangulations • mapping class groups

AWARDS FOR RESEARCH

- Craig A. Tracy Research Prize 2024 (University of California, Davis)
- Warwick Mathematics Institute 2022 Thesis Prize (University of Warwick)
- The Minister of Science and Higher Education Scholarship 2016/2017 (national, Poland)

SOFTWARE

I regularly contribute to `Veering`, a Python package for working with transverse taut and veering ideal triangulations. For instance, I am the sole author of the `carried_surface` and `mutation` modules, and have collaborated with Saul Schleimer and Henry Segerman on a handful of other modules, including `flow_cycles`, `taut_polynomial`, and `veering_polynomial`.

`Veering` can be used to conduct computational experiments, test hypotheses, find examples of veering triangulations with specific properties, and formulate new conjectures based on generated data. Since it is freely available as a Python package, it is a useful resource for the wider mathematics community.

PAPERS AND PREPRINTS

1. *Arbitrarily large veering triangulations with a vanishing taut polynomial*
   Groups, Geometry, and Dynamics, published online first (2025). arXiv:2309.01752 [math.GT].
2. *Mutations and faces of the Thurston norm ball dynamically represented by multiple distinct flows*
   Geometry & Topology, 29:4, 2105–2173 (2025). arXiv:2303.17665 [math.GT].
3. *The taut polynomial and the Alexander polynomial*
   Journal of Topology, 16: 720-756 (2023). arXiv:2101.12162 [math.GT].
4. *Computation of the taut, the veering and the Teichmüller polynomials*
   Experimental Mathematics, 33:1, 1-26 (2024). arXiv:2009.13558 [math.GT].
5. *Roots of Dehn twists on nonorientable surfaces* (with Michał Stukow)
   Journal of Knot Theory and Its Ramifications, Vol. 28, No. 12, 1950077 (2019).
   arXiv:1701.00531 [math.GT].
6. *Roots of crosscap slides and crosscap transpositions* (with Michał Stukow)
   Periodica Mathematica Hungarica, Vol. 75, Issue 2, pp. 413 – 419 (2017).
   arXiv:1601.06096 [math.GT].

TEACHING

University of California, Davis

2024/2025	Instructor, MAT21B **Integral Calculus** (2 × Fall, 1 × Spring)
	Instructor, MAT108 **Introduction to Abstract Mathematics** (1 × Spring)
2023/2024	Instructor, MAT21B **Integral Calculus** (1 × Fall, 1 × Spring)
	Instructor, MAT108 **Introduction to Abstract Mathematics** (1 × Fall, 1 × Spring)
2022/2023	Instructor, MAT21A **Differential Calculus** (2 × Fall, 1 × Spring)
	Instructor, MAT21B **Integral Calculus** (1 × Spring)

University of Warwick

2020/2021	Teaching assistant, MA131 **Analysis I** (term 1)
2019/2020	**Supervisor** for 10 first year Maths undergraduates (2 groups, terms 1 & 2)
	Teaching assistant, MA131 **Analysis I** (term 1)
	Teaching assistant, MA131 **Analysis II** (term 2)
2018/2019	**Supervisor** for 10 first year Maths+Physics undergraduates (2 groups, terms 1 & 2)
	Teaching assistant, MA3H6 **Algebraic Topology** (term 2)

SERVICE

2023/2024	Mentor in the UC Davis Directed Reading Program (UC Davis, Fall and Winter)
2021/2022	Early Career Researcher Committee (Oxford)
	Whitehead Library Committee (Oxford)
Dec 2021	Undergraduate Admissions interviewer (Keble College, Oxford)
2018/2019	Organizer of the Topology Reading Seminar (Warwick)

Additionally, I have refereed for multiple mathematical journals and for Mathematical Reviews.

TALKS

2025	Mar:	Geometry & Topology Seminar, Yale University
2024	Nov:	*Hodgsonfest*, University of Melbourne
	Oct:	Geometry/Topology seminar, UC Davis
	Sep:	Department Colloquium, Queen's University
	Sep:	Special seminars on Sep 9th and Sep 11th (2×1.5h), Queen's University
	Sep:	Geometry and Topology Seminar, CIRGET, Université du Québec à Montréal
	May:	*St. Louis Topology Conference: Flows and Foliations in 3-manifolds*, WashU
	Jan:	Algebra and Number Theory Seminar, Oregon State University (virtual)
2023	Nov:	*66th Texas Geometry and Topology Conference*, Rice University
	Nov:	Highway CA-17 Groups, Geometry, and Topology Seminar, SJSU&UC Santa Cruz
	Sep:	Topology Seminar, Oklahoma State University (virtual)
	Sep:	Geometric Topology Seminar, Columbia University
	Sep:	Geometry and Topology Seminar, Temple University
	Sep:	Topology/Geometry Seminar, Rutgers – New Brunswick
	Jun:	*Knots, Surfaces, and 3-Manifolds*, Casa Matemática Oaxaca
	Apr:	Australian Geometric Topology Webinar (virtual)
	Apr:	*Computational Problems in Low-dimensional Topology III*, Rutgers–Newark (short talk)
	Mar:	Topology seminar, UC Berkeley
	Jan:	*Oberwolfach: Low-dimensional topology* (short talk)
2022	Nov:	Geometry/Topology seminar, UC Davis
	Jul:	*AMS-EMS-SMF International Meeting*, Grenoble
	May:	Geometry and Topology Seminar, University of Bristol
	May:	Junior Topology and Group Theory Seminar, University of Oxford
	Apr:	*Mapping class group and* $\mathrm{Out}(F_n)$, Institut Henri Poincaré (short talk)
	Mar:	Geometry and Topology Seminar, Washington University in St. Louis (virtual)
2021	Nov:	North Meets South Colloquium, University of Oxford
	Jun:	*Nearly Carbon Neutral Geometric Topology Conference* (virtual)
	Apr:	Topology and Geometric Group Theory Seminar, Cornell University (virtual)
	Mar:	Topology Seminar, University of Texas at Austin (virtual)
	Feb:	Topology Seminar, University of Oxford
	Jan:	Algebra/Topology Seminar, University of Copenhagen (virtual)
2020	Nov:	Junior Topology and Group Theory Seminar, University of Oxford (virtual)
	Nov:	Topology Seminar, University of California Riverside (virtual)
	Nov:	Topology Seminar, Oklahoma State University (virtual)
2019	Oct:	Bristol Junior Geometry Seminar, University of Bristol
	May:	Junior Geometry and Topology Seminar, University of Warwick
	Feb:	Mathematics Postgraduate Seminar, University of Warwick
2018	Jan:	Junior Geometry and Topology Seminar, University of Warwick
2017	Jul:	*Young Topologists Meeting*, Stockholm
2016	Sep:	*The 19th International Workshop for Young Mathematicians*, Jagiellonian University
	May:	*18th Andrzej Jankowski Memorial Lecture Mini Conference*, University of Gdańsk
2015	Sep:	*The 18th International Workshop for Young Mathematicians*, Jagiellonian University

Last updated: July 3rd, 2025