

ANNA PARLAK

Krener Assistant Professor
University of California, Davis

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🔗 <https://annaparlak.github.io>

EMPLOYMENT

University of California Davis, United States
Krener Assistant Professor

July 2022 - now

University of Oxford, United Kingdom
Postdoctoral Research Associate in Pure Mathematics
(Funded by the Simons Investigator Award 409745 of Vladimir Marković)

May 2021 - July 2022

EDUCATION

University of Warwick, United Kingdom
Mathematics, PhD ► Advisor: Saul Schleimer
Thesis: *Veering triangulations and polynomial invariants of three-manifolds*

October 2017 - August 2021

University of Gdańsk, Poland
Mathematics, MSc ► Advisor: Michał Stukow
Thesis: *Roots in the mapping class group of a nonorientable surface*

October 2015 - July 2017

University of Gdańsk, Poland
Mathematics, BSc ► Advisor: Witold Rosicki
Thesis: *Relations between knots and planar graphs: Tait's constructions, Fox colourings and quandles*

October 2012 - July 2015

University of Gdańsk & Medical University of Gdańsk, Poland
Biotechnology, BSc ► Advisor: Stanisław Oldziej
Final project: *Phosphorylation-induced conformational changes of tau protein*

October 2010 - July 2013

RESEARCH-RELATED AWARDS

- 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 (Poland)

RESEARCH INTERESTS

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

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. Its free availability as a Python package makes it a useful resource for the broader mathematics community.

PAPERS AND PREPRINTS

1. *Arbitrarily large veering triangulations with a vanishing taut polynomial*
Submitted. [arXiv:2309.01752](#) [math.GT].
2. *Mutations and faces of the Thurston norm ball dynamically represented by multiple distinct flows*
To appear in *Geometry&Topology*. [arXiv:2303.17665](#) [math.GT].
3. *The taut polynomial and the Alexander polynomial*
J. Topol., 16: 720-756 (2023). [arXiv:2101.12162](#) [math.GT].
4. *Computation of the taut, the veering and the Teichmüller polynomials*
Exp. Math., 33:1, 1-26 (2024). [arXiv:2009.13558](#) [math.GT].
5. *Roots of Dehn twists on nonorientable surfaces* (with Michał Stukow)
J Knot Theor Ramif, Vol. 28, No. 12, 1950077 (2019). [arXiv:1701.00531](#) [math.GT].
6. *Roots of crosscap slides and crosscap transpositions* (with Michał Stukow)
Period Math Hung, 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, MAT21C Partial Derivatives and Series (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 (Fall and Winter quarters)
2021/2022	Early Career Researcher Committee (Oxford) Whitehead Library Committee (Oxford)
2018/2019	Organizer of the Topology Reading Seminar (Warwick)

I have refereed for multiple mathematical journals (either general or specializing in topology or dynamical systems) as well as for *Mathematical Reviews*.

TALKS

2024	May: <i>St. Louis Topology Conference: Flows and Foliations in 3-manifolds</i> , WashU
	Jan: Algebra and Number Theory Seminar, Oregon State University (virtual)
2023	Nov: <i>66th Texas Geometry and Topology Conference</i> , 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 $\text{Out}(F_n)$* , 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

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