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### RESEARCH INTERESTS

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**Low-dimensional topology**, in particular braids, knots and links, cobordisms, knot concordance, knotted surfaces, Khovanov and Heegaard Floer homology, 3- and 4-manifolds.

### EMPLOYMENT

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- 12/2025 – 11/2027 **Postdoctoral fellow** at the [University of Glasgow](#), Glasgow, UK.  
Supported by SNSF Postdoc.Mobility fellowship 230329.
- 10/2023 – 11/2025 **Postdoctoral fellow** at the [Max Planck Institute for Mathematics](#), Bonn, Germany. Mentor: Arunima Ray.
- 07/2019 – 07/2023 **Scientific assistant** at [ETH Zurich](#), Zurich, Switzerland.
- 10/2018 – 04/2019 **Teaching assistant** at [Ulm University](#), Ulm, Germany.
- 08/2017 – 05/2018 **Teaching assistant** at [Syracuse University](#), Syracuse, NY, USA.
- 10/2013 – 07/2017 **Teaching assistant** at [Ulm University](#), Ulm, Germany.

### EDUCATION

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- 07/2019 – 06/2023 **Doctor of Science** in Mathematics at [ETH Zurich](#), Zurich, Switzerland.  
Thesis: *On notions of braid positivity and knot concordance*.  
Advisor: Peter Feller.
- 08/2016 – 02/2019 **Master of Science** in Mathematics (1.0, with distinction) at [Ulm University](#), Ulm, Germany. Minor: Computer Science.  
Thesis: *Massey products and linking numbers*. Supervisor: Stefan Wewers.
- 08/2017 – 05/2018 **Master of Science** in Mathematics (GPA 4.0) at [Syracuse University](#), Syracuse, NY, USA.
- 10/2012 – 08/2016 **Bachelor of Science** in Mathematics (1.5) at [Ulm University](#), Ulm, Germany. Minor: Physics.  
Thesis: *Das Existenzproblem von Hurwitz*. Supervisor: Stefan Wewers.
- 09/2014 – 02/2015 **Visiting semester** at [ETH Zurich](#), Zurich, Switzerland.

### SELECTED AWARDS

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- 12/2025 – 11/2027 **Swiss National Science Foundation Postdoc.Mobility fellowship**.  
[Project 230329: Concordance of braid positive knots](#).
- 2017 **Fulbright Travel Grant**.
- 2014 – 2017 **Talanx Scholarship**.
- 2013 – 2014 **Deutschlandstipendium** Scholarship (Ulm University, EY Foundation).
- 2012 – 2013 **Deutschlandstipendium** Scholarship (Ulm University, Rotary Club Ulm).

### RESEARCH SEMESTER

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Participant in the **AIM Online Research Community *4-Dimensional Topology*** organized by Miriam Kuzbary, Maggie Miller, Juanita Pinzón-Caicedo and Hannah Schwartz in Spring 2021.

## PREPRINTS

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3. **Braid positive surgery descriptions**, with M. Kegel. [ArXiv:2512.14589](#).
2. **On the detection of knotted spheres by their traces in high dimensions**, with V. Bais, A. Di Prisa, D. Hartman, C.-S. Hsueh, M. Kegel, A. Merz, M. Pencovitch, A. Ray, D. Santoro and L. Wakelin. [ArXiv:2511.07251](#).
1. **Strongly quasipositive links are concordant to infinitely many strongly quasipositive links**. [ArXiv:2210.06612](#).

## PUBLISHED AND ACCEPTED PAPERS

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6. **Non-complex cobordisms between quasipositive knots**, with M. Borodzik. Accepted for publication in *J. Math. Pures Appl.* (2025), DOI. [ArXiv:2504.04894](#).
5. **Algorithms in 4-manifold topology**, with S. Bastl, R. Burke, R. Chatterjee, S. Dey, A. Durst, S. Friedl, D. Galvin, A. García Rivas, T. Hirsch, C. Hobohm, C.-S. Hsueh, M. Kegel, F. Kern, S. M. S. Lee, C. Löh, N. Manikandan, L. Mousseau, L. Munser, M. Pencovitch, P. Perras, M. Powell, J. P. Quintanilha, L. Schambeck, D. Suchodoll, M. Tancer, A. Thiele, M. Uschold, S. Veselá, M. Weiß and M. von Wunsch-Rolshoven. Accepted for publication in *Algebr. Geom. Topol.*. [ArXiv:2411.08775](#).
4. **Minimal cobordisms between thin and thick torus knots**, with S. Baader, L. Lewark and F. Misev. *Proc. Edinb. Math. Soc., II. Ser.* 69, no. 1 (2026), pp. 177–183.
3. **On the nonorientable four-ball genus of torus knots**, with F. Binns, S. Kang and J. Simone. *Algebr. Geom. Topol.* 25-4 (2025), pp. 2209–2251.
2. **3-braid knots with maximal 4-genus**, with S. Baader, L. Lewark and F. Misev. *Trans. Amer. Math. Soc. Ser. B* 11 (2024), pp. 600–621.
1. **The epsilon invariant at 1 of 3-braid knots**. *Algebr. Geom. Topol.* 23-8 (2023), pp. 3763–3804.

## CONFERENCE PROCEEDINGS (NOT PEER-REVIEWED)

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5. **MATRIX-MFO Tandem Workshop: Invariants in Low-Dimensional Topology, Combinatorics, Geometry, and Computation**, with S. Friedl, J. Licata, S. Tillmann. *Oberwolfach Rep.* 21 (2024), no. 3, pp. 2511–2550.
4. **Obstructing ribbon clasp number one**, with D. Celoria, A. Di Prisa, J. Howie, J. Licata, F. Misev, L. Schambeck, L. Wakelin. *Oberwolfach Rep.* 21 (2024), no. 3, pp. 2511–2550.
3. **Notions of braid positivity and knot concordance**. *Oberwolfach Rep.* 21 (2024), no. 3, pp. 2511–2550.
2. **Strongly quasipositive knots are concordant to infinitely many strongly quasipositive knots**. *Oberwolfach Rep.* 20 (2023), no. 1, pp. 172–174.
1. **Concordance of positive braid knots**. *Oberwolfach Rep.* 18 (2021), no. 3, pp. 2360–2362.

## INVITED TALKS AT CONFERENCES AND WORKSHOPS

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- 10/2025 Trisections and related topics, Marseille.  
11/2024 IberoSing International Workshop 2024: Low-dimensional Topology & Singularity Theory, Madrid.  
07/2024 Mini-symposium *Knot theory and low dimensional manifolds*, European Congress of Mathematics, Seville.  
04/2024 NRW Topology Meeting, Wuppertal.  
04/2024 Manifolds and groups in Bologna II, Bologna.  
09/2023 Leaning into Topology Workshop, Pisa.  
09/2023 Swiss Knots, Regensburg.  
06/2023 Mini Workshop, Bern.  
03/2023 The low dimensional workshop, Budapest,   
11/2022 Paroles aux jeunes chercheuses et chercheurs en géométrie et dynamique, Orsay.  
09/2022 Minisymposium *Algebra and Low-Dimensional Topology*, DMV Annual Meeting 2022, Berlin.  
06/2022 Surfaces in 4-manifolds, Le Croisic.

## INVITED TALKS AT SEMINARS (NON-LOCAL)

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- 01/2026 Geometry Seminar, MPI MiS Leipzig.  
10/2025 Algebra and Geometry Seminar, Neuchâtel.  
07/2025 Oberseminar Global Analysis and Geometry, Regensburg.  
06/2025 Séminaire Géométrie des Espaces Singuliers, Lille.  
05/2025 Geometry seminar, ETH Zurich.  
12/2024 Oberseminar Topologie, University of Bonn.  
09/2024 Séminaire de Géométrie, Algèbre, Dynamique et Topologie, Dijon.  
05/2024 Séminaire de Géométrie et Topologie de Marseille, Marseille.  
05/2024 Oberseminar Topologie, Münster.  
04/2024 Geometry & Topology Seminar, Glasgow.  
03/2024 MPIM Oberseminar, MPIM Bonn.  
11/2023 MPIM Topology Seminar, MPIM Bonn, short talk.  
05/2023 Low-dimensional topology seminar, MPIM Bonn.  
12/2022 Geometry and Topology Seminar, CIRGET, Montréal, online,   
06/2022 LKS-Seminar, Regensburg.  
05/2022 Geometry & Topology Seminar, Caltech, online.  
05/2022 Oberseminar Geometrie, Fribourg.  
02/2022 Knot Online Seminar (K-OS), online,   
04/2021 AIM Online Research Community 4-Dimensional Topology, lightning talk.

## INVITED TALKS AT GRADUATE COLLOQUIA

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- 12/2023 Pitt AWM Student Seminar, Pittsburgh, online.  
10/2023 Geometry Graduate Colloquium, ETH Zurich.  
10/2022 Bern–Fribourg Graduate Seminar, Bern.  
05/2022 Baby Geometri Seminar, Pisa.  
04/2022 Bernoullis Tafelrunde, Basel.  
11/2021 Zurich Graduate Colloquium, Zurich.  
04/2021 Geometric Topology Grad and Postdoc Seminar (GT GAPS), online.

## CONTRIBUTED TALKS AT CONFERENCES AND WORKSHOPS

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02/2024	BTW4: Knot Floer Homology, Besse.
02/2023	Winter Braids XII, Tours.
01/2023	Low dimensional topology, MFO Oberwolfach.
05/2022	Swiss-Mathematical-Society Doctoral Day 2022, Fribourg.
04/2022	BTW2: Sliceness, exotic pairs, and quantum invariants, Aussois.
09/2021	Invariants and Structures in Low-Dimensional Topology, MFO Oberwolfach, short talk.

## OTHER CONFERENCES AND WORKSHOPS ATTENDED

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12/2025	Workshop on surfaces in 4-manifolds, Regensburg.
10/2025	36. NRW Topology Meeting, Bonn.
07/2025	Categorification in Low Dimensional Topology, Bochum.
06/2025	Swiss Knots, Geneva.
09/2024	Workshop on 4-manifolds and algorithms, Regensburg.
02/2024	Winter Braids XIII, Montpellier.
09/2023	GRAZP: Groups and Rigidity Around the Zimmer Program, Ventotene.
07/2023	Gauge Theory and Topology: in Celebration of Peter Kronheimer's 60th Birthday, Oxford.
01/2023	Winter school on singularities and low-dimensional topology, Budapest.
08/2022	Frontiers in Geometry and Topology Summer School, Trieste.
04/2022	Braids in Low-Dimensional Topology, ICERM, Providence.
08/2021	Perspectives on quantum link homology theories, Universität Regensburg.
07/2021	Tech Topology Summer School, Georgia Institute of Technology, online.
07/2021	Swiss Knots, Fribourg.
06/2021	NCNGT: Nearly Carbon Neutral Geometric Topology Conference, online.
06/2020	NCNGT: Nearly Carbon Neutral Geometric Topology Conference, online.
02/2020	Winter Braids X, Pisa.
10/2019	Regional workshop on foliations and 3-manifolds, Universität Regensburg.
10/2019	Low-dimensional topology workshop, Universität Regensburg.
09/2019	Workshop on 4-manifolds, Max Planck Institute for Mathematics Bonn.
09/2019	Of coarse! Quasi-isometries and groups: rigidity and classification, Ventotene.
07/2019	Swiss Knots, ETH Zurich.
10/2017	27th annual <i>Route 81</i> conference on commutative algebra and algebraic geometry, Cornell University, Ithaca, NY, USA.

## OTHER SHORT RESEARCH STAYS (WITHOUT TALK, CONFERENCE OR WORKSHOP)

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07/2025	three days, Humboldt University Berlin.
08/2024	one week, ETH Zurich.
03/2024	three days, ETH Zurich.
04/2022	one week, ICERM, Providence.
09/2020	three days, University of Regensburg.

## SUPERVISION

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- 02/2025 – 10/2025 **Master thesis** by Chiara Donatone at Università degli Studi di Milano.  
Thesis title: *On RBG links and knot traces*.  
Co-supervision with Diego Matessi.
- 06/2024 – 06/2025 **Master thesis** by Frieda Kern at the University of Bonn.  
Thesis title: *Linking number obstructions to satellite homomorphisms*.  
Co-supervision with Peter Teichner.  
Continues as [PhD student](#) at the University of Glasgow.

## TEACHING

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- University of Bonn/MPIM Bonn**
- Winter 2024/25 Lecturer for [Topics in 3-manifold topology](#) (Master in Mathematics).
- ETH Zurich**
- Spring 2022 Course organizer for **Analysis II** (Bachelor in Civil, Geospatial, or Environmental Engineering).
- Fall 2021 Course organizer for **Analysis I** (Bachelor in Civil, Geospatial, or Environmental Engineering).
- Spring 2021 Course organizer for [Topologie](#) (Bachelor in Mathematics).
- Fall 2020 Course organizer for [Lineare Algebra I](#) (Bachelor in Mathematics, Physics, or Interdisciplinary Sciences).
- Spring 2020 Course organizer for [Algebraic Topology II](#) (Bachelor or Master in Mathematics).
- Fall 2019 Teaching assistant for [Complex Analysis](#) (Bachelor in Mathematics, Physics, or Interdisciplinary Sciences).
- Syracuse University**
- Spring 2018 Teaching assistant for **Calculus III**.
- Fall 2017 Teaching assistant for **Calculus III**.
- Ulm University**
- Summer 2019 Instructor for **Linear Algebra Review Course** (Bachelor in Computer Science and Engineering).
- Winter 2013/14 – Summer 2019 Student teaching assistant for **Analysis I-III** and **Linear Algebra I-II**.

## TEACHER TRAINING

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- Winter 2024/25 Participation in the [Teaching Mentoring Program](#) at the Hausdorff School for Mathematics in Bonn.  
Mentors: Viktoriya Ozornova and Arunima Ray (both MPIM Bonn).
- 09/2021 Certificate **Learning to Teach**.  
Program for doctoral teaching assistants at ETH Zurich.  
Teaching project: *How to teach writing proofs—classroom assessment techniques in mathematics classes*.

## OUTREACH ACTIVITIES

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- 03/2026 Co-organizer of **GROW@Dresden 2026** (Graduate Research Opportunities for Women at Dresden 2026).
- 03/2025 Invited panelist for panel discussion “*What is mathematics research like?*” at **GROW@Frankfurt 2025**.
- 12/2024 Invited speaker at **Tea Time with Women in Mathematics**, Bonn.
- 04/2024 Volunteer at the mentoring lunch at **GROW@Bonn 2024**.
- 03/2023 *Work as a PhD Student*, short talk, **MindPhair 2023** at ETH Zurich (job-fair for mathematicians, physicists and computational scientists).
- 03/2022 *Work as a PhD Student*, short talk, **MindPhair 2022** at ETH Zurich.

## CONFERENCE AND SEMINAR ORGANIZATION

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- 10/2023 – 11/2025 **Low-dimensional topology seminar**, MPIM Bonn.
- 09/2024 **MATRIX-MFO Tandem Workshop: Invariants in Low-Dimensional Topology. Combinatorics, Geometry, and Computation** at Mathematisches Forschungsinstitut Oberwolfach, Sept 22–27, 2024 (joint with Stefan Friedl, Joan Licata and Stephan Tillmann).
- 09/2020 – 07/2023 **Geometry Graduate Colloquium** at ETH Zurich (funded by the Zurich Graduate School in Mathematics).

## REFEREEING AND REVIEWING

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- 2024 – present **Referee** and **quick opinions** for *Algebr. Geom. Topol.*, *Bull. Lond. Math. Soc.* and *Pac. J. Math.*
- 2024 – present **Reviewer** for *zbMATH Open*.

## OTHER ACADEMIC SERVICE AND ACTIVITIES

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- MPIM Bonn**
- 09/2024 Member of the Postdoc Representative Selection Committee.
- ETH Zurich**
- 09/2021 – 07/2023 Co-organizer of get-togethers for women in math at ETH Zurich and the University of Zurich (funded by the Zurich Graduate School in Mathematics).
- 08/2021 – 07/2023 Elected member of the Nachdiplom Lectures Committee at the Department of Mathematics.
- 05/2020 – 05/2023 Member of the Board of **VMM** (Association of the Mid-level Academic Faculty at the Department of Mathematics).
- 10/2022 Co-organizer of the first D-MATH (Post)Doctoral Welcome Day.
- 05/2021 – 05/2022 Mid-level faculty representative in the Department Conference.
- Ulm University**
- 10/2016 – 07/2017 Member of the Mathematics Student Council (Fachschaft Mathematik) at the Department of Mathematics and Economics.

## REFERENCES

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[Peter Feller](#), University of Neuchâtel,

[Matthew Hedden](#), Michigan State University,

[Lukas Lewark](#), ETH Zurich,

[Viktoriya Ozornova](#), MPIM Bonn (Teaching),

[Arunima Ray](#), University of Melbourne,

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